

# *The American Journal of* **CLINICAL MEDICINE** *Dependable Therapeutic Fact for Daily Use*

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## Scarlet Fever—Pointers Old and New

IN one of his very excellent popular medical articles prepared for lay folk, Dr. W. A. Evans, one-time health commissioner of Chicago, reminds the readers of *The Chicago Tribune* that, unless special precautions are taken, the prevalence of scarlet-fever will increase, month by month, until the end of April, while, during May the number of cases will be practically the same as in April. This, he sets forth, is the rule for colder climates. In the warmer parts of the United States, the disease will be at its maximum in March, while May will see a drop similar to that which in the north occurs in June. In other words, although scarlet-fever may occur at any time of the year, it is most likely to become epidemic during the spring months, and we know that before this number of CLINICAL MEDICINE reaches our readers many of them will be strenuously engaged in the annual battle with this disease.

Unfortunately, we know, as yet, little about the essential etiology of scarlatina. For some time there has been a more or less general belief that it is caused by streptococci, and for this reason special streptococcic bacterins have been prepared, and these have been used with fair success for prophylactic purposes.

Whatever the specific microorganism, it is present in the blood, the desquamating scales, the discharges from the throat and nose, and possibly other discharges. However, in recent years it has become the general opinion that the importance of the desquamating skin as a means of conveying the infectious organism has been greatly overrated, while more and more importance is being ascribed to the infective character of the nasal and aural discharges. It is for this reason that physicians now insist strongly upon disinfection of the nose and throat as an essential part of the treatment, in the expectation of thus reducing the probability of the transmission of the disease; and not merely as heretofore, because of the relief which the patient experiences from this treatment.

In this connection, we may call the attention of our readers to a brief abstract appearing in another portion of this issue, telling of the method of treating scarlet-fever being employed in the French army, where the disease is said to be epidemic; this treatment depending for its efficacy largely upon the attention paid to the upper air-passages and the skin. Chantemesse, who makes this report, uses, as a regular routine, applications of 10-percent carbolized

oil for the throat and nose. (See "What Others are Doing" for further details.)

Another French observer, Dr. Felix Ramond, noticing the very favorable effects produced by sodium salicylate in scarlatinal rheumatism (which occurred in 29 percent of his cases) was led to try the salicylate in uncomplicated scarlatina. He declares that, under this treatment, temperature and pulse fall, diuresis occurs, his patients feel better, and the effect on complications is just as evident. Dosage, the same as for rheumatism.

Kerley, in his excellent "Practice of Pediatrics," advises irrigation of the throat with hot salt solution, at a temperature of 120 degrees. "Those who have thus treated the fetid, sloughing throat of scarlet-fever," he says, "need no argument as to its possible advantages."

These irrigations are made from a fountain-syringe suspended about three feet above the child's body. The largest-size hard-rubber rectal tip is employed to bring the current into contact with the throat, the flow being interrupted every few seconds, but it should be forcible enough to act as a cleansing wash, while the volume of the fluid is so small that no inspiration of water can occur. Although a little difficulty may be experienced at first in making these irrigations—which are to be applied with the child resting on its right side, without a pillow—the relief is so great that usually no trouble will be experienced after the first irrigation has been administered, and appreciated for the relief afforded.

Doctor Candler, in his splendid "Everyday Diseases of Children," advises the use of an alkaline antiseptic solution for cleansing the mouth, throat, and nares. One of the well-known menthol-compound tablets, dissolved in 12 ounces of hot water, provides an excellent solution for this purpose.

The method of treating scarlet-fever originally proposed by Milne has been widely adopted, especially in England and now also, as we learn, in France. It is extremely simple, and consists, in the main, in anointing the whole body with undiluted eucalyptus-oil. It is asserted that these inunctions not only serve to prevent the scattering of the scales and add distinctly to the comfort of the patient, but that they also, either through skin absorption or inhalation of the volatile eucalyptus-oil, exert a decidedly modifying action on the course of the disease.

Turn to almost any of the standard textbooks on pediatrics, and you will find this or some similar statement: There is no specific medical treatment for scarlet-fever. In

other words, the average pediatrician suggests almost no medication whatever. Usually, of course, the author will recommend the cleaning out of the bowels with some simple laxative—but that will be about all by way of therapy.

Readers of CLINICAL MEDICINE know that we believe in more energetic measures. There are at our command remedies of distinct value for combating scarlet-fever—remedies that many physicians have come to look upon as indispensable. And first on this list we are bound to name calcium sulphide; for, as Candler cogently declares, "This sulphur compound is the greatest of all systemic antiseptics." Calcium sulphide should be prescribed in doses of 1-6 to 1-3 grain, repeated every hour until the patient is thoroughly saturated with it—exhales the sulphureted odor. In association with it, nuclein should be given, in order to increase vital resistance. If there is much fever, it may be combated with small, frequently repeated doses of aconitine, the cardiac effects of which may be guarded against by the administration of digitalin with every second or third dose.

The patient's bowels, of course, should be cleaned out thoroughly at the very beginning of the treatment, preferably with calomel, now on the market in delightfully tasting aromatic tablets, which the child will eat avidly. It may be followed with castor-oil or one of the pleasant effervescent preparations of magnesium sulphate.

If the temperature tends to run high, bathing or giving an occasional cold-pack may be resorted to without fear. Kerley is correct when he says: "The mere existence of a rash is no contraindication to the application of moderate cold to the skin. The pack may be used in scarlet-fever, just as in pneumonia or typhoid-fever. The fear that the disease may strike in and kill the patient is one of the many inexplicable ideas of the laity with no foundation in fact." In giving the pack or bath, care must be taken, of course, that it is not too cold at the start. Begin with a temperature of about 95° F., then gradually reduce—though rarely, if ever, to below 80 degrees. If these baths are followed by inunctions of cold-cream or liquid petrolatum, or rubbing with eucalyptus-oil, either of full strength or mixed with one of the fats, it will add greatly to the patient's comfort.

Particularly on account of the tendency to renal complications (nephritis), which so often occur after the acute symptoms of the disease are past, the diet of the scarlatina-patient is of the utmost importance. Formerly, milk

alone was prescribed; but, it must be remembered that this is a highly concentrated protein food and proteins often putrify, that it has a tendency to produce constipation, especially in children, and that the patient is likely to get very tired of it. Just as safe—in fact, probably safer—and from almost every point more satisfactory, are the simple cereals, given mainly in the form of gruels; various combinations of these being permissible. Fruit-juices are usually relished, and may be given freely.

Whatever the diet, the doctor should keep in mind the importance of that old adage of ours—"Clean out, clean up, and keep clean." The bowels should be moved every day, either by means of laxative salines or enemas, or both; while the sulphocarbolates or other intestinal antiseptics need to be given practically throughout the entire course of the disease. Recently many physicians have employed Bulgarian-bacillus cultures, to keep the bowel in a healthy condition. These cultures are of special value after the febrile stage of the disease is past, and during the convalescent—and nephritic—period.

This describes, in briefest outline, the rational modern method of treating scarlet-fever. No attempt has been made to cover the treatment of complications or to give every detail for meeting every complication that may arise. However, we would particularly emphasize the following points:

1. Scarlet-fever is transmitted mainly by the discharges from the nose and throat; also, the throat is probably the breeding ground for multitudes of the causative microorganisms, and, therefore, it is desirable to treat this portion of the body energetically in every case of scarlet-fever. Antiseptic gargles, sprays, and irrigations may be employed, according to the age of the child, the severity of the disease, and the ease of application. In older patients, sprays of carbolized oil are suggested; in younger ones, irrigation in the manner advised.

2. Skin inunctions with eucalyptus-oil are undoubtedly of great value. Eucalyptus is a powerful and, yet, an almost harmless antiseptic.

3. For its direct effect upon the cause of the disease, calcium sulphide is the best remedy at our disposal. It should be given in every case of scarlet-fever, from the very beginning, and continued throughout the febrile stage. It should be supplemented by nuclein, in generous dosage. Aconitine, supplemented by baths or cold compresses, is our best remedy for fever.

4. As in all acute infectious diseases, careful attention must be paid to the alimentary canal, which should be cleaned out and kept clean with the aid of indicated drugs, while nutrition is maintained by means of indicated foods.

If you will keep these points in mind, you will not go far wrong.

The Illinois State Hospital for the Insane has substituted clay modeling for golf as a cure for insanity. Let's see; this removes the last excuse for perpetuating golf, doesn't it?—*Cleveland Plain Dealer*

## OUR PROVISION FOR OLD AGE

It often becomes a serious question, as we survey the course of human events, to decide whether, on the whole, the race is evolving or devoluting. Most certainly, we are adding to our store of facts and developing the mechanic arts; our captains of industry are piling up huger fortunes; our microscopes look more deeply into the minuter forms of matter; our prisons, asylums, hospitals, almshouses, and other public institutions increase in magnitude and completeness.

Is this all there is to it?

The litany said: "From the fury of the Northmen, good Lord, deliver us!" Instead of a few long ships, with a few score of skin-clad spear- and swordsmen, we see millions of fierce Northmen, equipped with the last possibility of death-dealing paraphernalia, rushing upon the south.

Has there been any essential change in the nature of men? in their mental development? in their moral standards? Are we better, wiser, stronger, braver, brainier, kinder than our faraway ancestors?

We might ask to have pointed out to us the modern equivalents of Plato and Aristotle, Jesus and Buddha, Euclid and Archimedes, Phidias and Praxiteles, Homer and Aeschylus. But let us come nearer home and ask about an ordinary, everyday, everybody matter: How about our treatment of the old?

More than one savage tribe, when they concluded that the days of usefulness for any member had passed, served the unfortunate—or otherwise—member up as the *piece de resistance* of a barbecue. The senile might congratulate himself on passing over in a scene of hilarity—à la Clarence in his malmsley butt—in which he himself played the star part. Or, he might find a grim humor in the thought that even in death he would prove a tough morsel. But, in any event, looking at the vicissitudes of savage

life, with its constant struggle for food, for existence, this ending was as merciful as is the bottle of chloroform inadvertently left within reach of the hopeless, inoperable cancer-patient.

Not a week passes but that we read in the dailies about some old man, bereft of hope, unable to find supportable work, dependent upon kin, having committed suicide. What has life to offer such a one to render it attractive? Friends of one's youth gone, children ungrateful, employment unattainable, the failing senses destroying the pleasures open to younger men; all the while the infirmities of age increasing, while the means of relieving them, and providing such alleviation as might be possible are wanting—what wonder that self-destruction is growing in frequency among aged men?

Add to this the consequences of mistaken confidence; the unconscionable scoundrel in whom one trusted, who would rather make one dollar by swindling than two by playing the game straight, robs his victim, not alone of the savings of a lifetime, but also of the respect of his fellow men. To such a man, faith in one's fellows merely is evidence of cerebral softening, and the highest effort of mentality would be an address on the science of getting rid of a trimmed sucker.

Well, suppose the old man has not the nerve to blot out his life—the other week the papers told of one instance, that of a man who had drawn a salary of one hundred dollars a week which he had been handing over to his family. At the age of 74, he was let out, penniless; his wife and children sent him to a little country town and allowed him one dollar a week upon which to live. Naked and starving, this old decrepit man ran out into the streets of Chicago and made known to the world his plight. Better dead?

In the last analysis, a man's life is his own. If the present offers no inducement for living and the future has no betterment in store, why live?

I have before me an appeal from C. A. Burrows, of Lancaster, Pennsylvania. Aged 77 years, he is urging a constitutional amendment permitting the United States government to establish old-age pensions; also, to establish a "twilight home for old age." The former is a most desirable scheme indeed; the latter is but a very small drop in the bucket, and the advocacy of such little measures is liable to divert interest from the main point, the pension-matter. Burrows tells us that only the United States, Russia, Turkey, and Japan, of the great nations, have no such pensions for old age.

A great proposition and one that should receive the active advocacy of everybody, especially of those who begin to realize the need of such a provision for the aged. Mr. Burrows should be heartily supported in his movement.

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"He is young who sees more ahead of him than behind him." That's why we never expect to grow old.

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### SOME CONSIDERATIONS ON BLOOD PRESSURE

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The mere diagnosis of increase or relaxation of vascular pressure is not enough. We must know how and why the pressure is altered.

An increase of the pressure may be caused by an increase in the force of the heart or in its rate, by which more blood is propelled into the aorta. Or it may be owing to contraction of the capillaries and arterioles, by which the escape of blood into the veins is hindered. There is a clinical significance in this distinction.

So, also, a lowering of pressure may result from a slower heart action, a weaker or less complete heart action, each beat sending less blood into the aorta; or there may be a relaxation of the arterioles, through which the blood is permitted to escape into the veins more readily. Low tension may also be due to a deficient supply of blood to the left heart, from contraction or other obstruction of the pulmonary vessels, or from stagnation of the blood in the great veins, as in shock.

A short, quick heart-beat has less influence than a prolonged and complete one, as in the former case the heart has not time to be filled with blood and less is propelled proportionately to the force exerted. Complete diastolic relaxation allows a full supply of blood to enter the heart, whereas an incomplete relaxation prevents the entrance of blood. Increasing the tonicity of the cardiac muscle, therefore, is likely to lower the blood pressure, by unduly prolonging the systole. It is probably because of this fact that good observers occasionally have seen better effects from vascular relaxants, such as sparteine, than from constrictors like digitalis, when the circulation needed help.

A rise in blood-pressure slows the pulse by increasing the tonicity of the pneumogastric center in the medulla, while a fall in pressure quickens the pulse by relaxing the tone. Hence, again we see where the influence of strychnine may be exerted, by raising the tonicity of the center and thus slowing and strengthening the pulse.



A rise in blood pressure is accompanied by slowing of the pulse if the rise results from contraction of the arterioles; but, if the pressure rises and the pulse quickens, the change is in consequence of an increase in heart power. When pressure and pulse rate fall together, the cause likewise is to be found in the heart; but if the arterioles contract, the vagus roots are stimulated, the pulse slows, with the rise in pressure. The slowing of the pulse, after the use of drugs that contract the arterioles, is far more rapid than the fall of pressure. If the vagi are paralyzed, we may have an increase in blood pressure and in the pulse rate, from contraction of the arterioles.

We must not fall into the error of considering the circulation as a whole or as uniform. The vessels of the abdominal viscera are quickly influenced by the vasomotor center, contracting powerfully when this center is stimulated; but the vessels of the muscles are scarcely influenced at all; in fact, they are, in reality, dilated, inasmuch as they receive more blood when other areas of the circulation are contracted. Nevertheless, these muscular vessels are influenced by digitalin, contracting strongly, thereby helping to maintain the pressure.

Courage, dear soul,  
The hosts of heaven, the whole  
Battalion of the seraphim await  
To see your battle against wrong and hate.  
Not all the angels in phalanx  
Could for God's will prevail,  
If in our struggling, mortal ranks  
These men of earth in love's great cause should fail.  
—Edwin Markham in *The Nautilus*

#### RELIEF FOR THE CORPULENT

Most men and all women who are over the average weight for age and height want to reduce. However, the means of accomplishing this are not so simple as may at first appear. We have practically no foods capable of sustaining life in full health that can not be transmuted into fatty matter.

Fats, sugars, carbohydrates, and proteids alike may serve to increase adiposity. It would seem, therefore, that we are compelled to fall back upon the rather obvious principle of limitation of food—for, if we take in less than we excrete, there necessarily must occur a diminution of one's weight. But—

A jockey had, by dint of incessant self-denial, reduced his weight to the prescribed degree, but just a few hours before the race, partook of an ounce of hot tea, when, presto,

at the weighing he was found to have gained nearly a whole pound. Don't ask me how!

A lady who, in the pursuit of "sveltiness," had reduced her intake until she ceased to increase weight, found that she was consuming only thirteen ounces of food in each twenty-four hours; but she was losing strength faster than weight. This thirteen ounces of food included liquids as well as solids.

In the case of men, the problem seems easier. This writer possesses an equator that appears indefinitely expandible; however, abstinence from undue amounts of liquids, together with a vigorous daily application of the bucksaw to a lot of tough old oak wood, serves the purpose admirably; and it dissipates all unpleasant side ailments as well.

Few women seem disposed to look upon the bucksaw with the affection its virtues warrant. They prefer to take medicines.

Try this:

Phytolacca, to loosen the superfluous material.

Lobelia, to stimulate the excretories to carry it out of the body.

Hydrastis, to close up the void and prevent pendulous skin and wrinkling.

Each to be dosed to the needs and its effect. Continued for long periods, at least several months.

Is this treatment "specific?" Of course not—it is merely suggestive. But that anti-obesity treatment may be effective I know, and there are other things worth trying. Perhaps you will suggest some that have served you well.

#### THE GERMICIDAL ACTION OF DISINFECTANTS UPON THE TUBERCLE BACILLI

In our daily work, in office and outside practice, we are constantly taking advantage of facts which we consider to be self-evident, but which, after all, required much laborious investigation before they could be determined. We employ, for instance, a 0.5-percent solution of phenol (carbolic acid) or a 0.001-percent solution of mercury bichloride for disinfecting objects that have been exposed to bacterial contamination (please note, only after all visible dirt has been removed by washing and scrubbing) and feel safe that they have been freed from any possible contamination. We paint the skin with iodine prior to making an incision, being satisfied that with an otherwise unobjection-

able technic we need fear no danger from that source of possible infection.

It hardly ever occurs to us, however, to inquire how it is that we can know the actual germicidal action of those antiseptic substances employed in the respective degrees of concentration, and we reckon little of the time, labor, and patience expended by the research-workers in their endeavors to furnish us with safe methods of procedure.

This seems to be the unavoidable condition brought about by the acquisition of knowledge (and its application to the practice of medicine) that cannot be obtained in the former manner of clinical and bedside study.

The research-worker in his laboratory, making use of the data ascertained by physiology, chemistry, biology, and all the auxiliary sciences, devotes weeks, and months, and years to the study of some particularly difficult or fascinating problem. The clinician calmly appropriates this student's results; and both are apt to think, each of the other, a little slightly—the laboratory-worker with a pitying smile at the necessarily limited knowledge of the clinician, the latter, with a half-impatient resentment of the didactic assurance of his colleague of the test tube and animal experiment.

Yet, both are necessary and important members of the medical profession. Only in the more vivid, more immediate and more tangible experiences of the clinician we are apt to undervalue the patient labor of the other, albeit, realizing gratefully that without him we should be sadly at loss in many an emergency.

In a comparatively recent number of *The Journal of Infectious Diseases*, Dr. Lydia M. DeWitt and Miss Hope Sherman reported some very difficult and tedious experiments, in which they attempted to determine the germicidal action of certain disinfectants upon tubercle bacilli. While the search for disinfectants has been successful with regard to the great majority of pathogenic microorganisms, in the case of the tubercle bacillus it has always been attended with an unusual degree of difficulty; owing, according to some authors, to the fatty-waxy capsule with which this bacillus has been provided as a means of defense in its century-old struggle with the animal and human organisms.

Consequently it may be understood why, in all the great mass of literature on general disinfection, there is comparatively little dealing at all directly with the power of chemicals to kill the tubercle bacillus, and

that this has generally been accepted, although it is nonsporogenous, as being among the most resistant of pathogenic organisms.

The researches of DeWitt and Sherman thus acquire an interest which is the greater, as they bear upon those of Finkler, Countess v. Linden, Strauss, and some others with reference to the chemotherapy of tuberculosis.

The elaboration of a suitable method for these experiments has taxed the ingenuity of many research-workers, since certain disadvantages and inadequacies appear to inhere in all of them.

After many preliminary tests, DeWitt and Sherman employed a direct method of exposing clumps of bacterial cultures to the action of the disinfectants and observing their power of destroying the viability of the tubercle bacilli and controlled the results of these experiments with animal-cultures, making use of the so-called garnet-method suggested a number of years ago by Kronig and Gaul.

In thus exposing clumps of the bacteria to the action of the disinfectants, the time limits as a rule, were one hour, six hours, and twenty-four hours. At the end of the specified time, the clumps were placed either in a neutralizing fluid or in water, in order to interrupt the action of the disinfectants. In all cases, the clumps were then washed through four solutions, the last two being 0.9-percent salt solution. Bits of the clumps were then seeded on slants of glycerin-agar, in order to determine whether they were still viable.

For the animal experiments by the garnet-method, crude Bohemian garnets of equal size were prepared by a rather complicated process, and sterilized. They were then soaked in a thin filtered suspension of human tubercle bacilli and dried over fused calcium chloride. About 30 infected garnets were then placed on small platinum baskets and immersed in the various disinfectant dilutions. At the end of the desired times, the baskets were removed to dishes containing large quantities of distilled water, then either to solution of ammonium sulphide or to another dish of distilled water, and then washed in two salt changes of solutions. Then 10 of the treated and washed garnets were dropped into test tubes, each of which contained 2 Cc. of sterile salt solution, and agitated in a shaking-machine for five minutes.

The fluid, containing the organisms which had been shaken from the garnets was then injected subcutaneously into guinea-pigs.

For controls, clumps and garnets were treated in the same way, using 0.9-percent salt solution in place of the disinfectants.

In not a single instance, did a control animal fail to develop local and general tuberculosis, nor did a control tube fail to show luxuriant growth, thus proving that the cultures employed were virulent. And it may safely be affirmed that, where the animals did not develop tuberculosis or the culture tubes did not show growths, this was because of the bactericidal action of the disinfectant with which the clumps, or the garnets, as the case might be, had been treated.

Altogether, the investigators named, sacrificed approximately 1,000 guinea-pigs and used many more tube cultures to ascertain the bactericidal value of the disinfectants under examination.

We have described the method at some detail, because we believe it to be of interest for the practitioner to know how much patient study and research may be necessary to obtain results, the summary of which not infrequently may be condensed into a few lines. And these experiments, as we shall show, are not limited in their application to tuberculosis alone.

Under the influence of these and other laborious researches, it may be a little disconcerting and, possibly, discouraging to recall that the value of disinfectants, of fumigation, and of other established methods for preventing infection by various pathogenic systemic organisms has recently been questioned by noted sanitarians.

Of course, we long since have passed the stage when we believed that, for instance, a 5-percent solution of carbolic acid, or even tincture of iodine, applied haphazard to a dirty wound, would counteract infection and in consequence, feel safe without exercising strict cleanliness. But we have been feeling rather comforted after fumigating a room, from which a scarlet-fever patient had been discharged, with sulphur or formaldehyde, and have felt that we had done the needful to make it safely habitable again—perhaps on account of the unholy stench which our fumigation had produced. We are also quite careful to destroy fomites, clothing, and other articles contaminated by discharges of patients afflicted with infectious diseases.

It does seem rather radical, therefore, when we read that Dr. Alvah H. Doty (*Med. Rec.*, Oct. 17, 1914), attempts to disprove the fomites-theory and also the idea that the

air swarms with pathogenic bacteria. Even in the sick-room, he asserts, these germs are much less in number than has commonly been supposed, while being removed from their proper media, they are disabled and of little danger.

Now, while we are quite willing to accept Doctor Doty's high estimation of the disinfecting value of fresh air, sunlight, and lots of soap and water vigorously applied, and while we agree with him in his contention that disinfectants are of little value unless filth and dirt are first removed, we shall feel safer if we continue to burn the clothes into which consumptives or diphtheria patients have expectorated, and have destroyed other fomites which contain the discharges and other contaminating material from patients ill with infectious diseases.

Yet, in spite of all, Doctor Doty's article is well worth pondering over, although it cannot lessen our gratitude to investigators like Doctor DeWitt and her associate for her patient and thorough labors.

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"Enthusiasm is that thing that makes a man boil over for his business, for his family or anything he has an interest in, for anything his heart is in. Enthusiasm is one of the greatest things a man can have."

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#### NEW DRUGS VERSUS OLD DRUGS

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Dr. W. J. Robinson has the rare faculty of crowding a whole sermon into a single paragraph. Witness his editorial comment, in the last number of *The Critic and Guide*, on that tiresomely reiterated advice to doctors—to beware of the new drugs and stick to the Pharmacopeia. Listen to Robinson:

"Some staid, respectable doctors tell us not to be constantly running after new drugs. It is good advice. It is good advice provided we bear in mind that a drug is not necessarily good because it is old; nor is a drug necessarily bad because it is new. If all the old drugs were good, so many of them would not be kicked out with each revision of the Pharmacopeia. Just look over your drugs in the Pharmacopeias of fifty, forty, thirty or twenty years ago and see how many of them have been dismissed from the last Pharmacopeia. It is not good to be over-sanguine in using new drugs that have not been given a fairly good trial by competent clinicians; but it is just as bad, if not worse, to be a hidebound conservative and stick to old drugs that have nothing in their favor but reputation of age, but which have been proven by numerous pharmacologic and

clinical trials to be worthless. Only the man with an open, unbiased mind can be a successful physician. But what a rare treasure an open, unbiased mind is!"

We will go a step further than Doctor Robinson. In our opinion, it is the *duty* of every competent physician—and every doctor should be competent if he is to practice medicine—to give a faithful, conscientious trial to every remedy that shows promise of substantial merit; *always keeping in mind the best interests of his patients*. Pope's celebrated epigram,

Be not the first by whom the new are tried,

Nor yet the last to lay the old aside,

contains much worldly wisdom. However, someone must be first. If not you—then who? If nobody is to try the new drugs, or if only the scholastically elect, we shall soon be at a standstill. Progress involves mental alertness on the part of those who "follow" as well as those who lead. And in this ages-old advice to shun the new, I am reminded of the damsel of our childhood rhymes who was admonished by her cautious mother to

"Hang your clothes on a hickory-lim-b,  
But don't go near the water."

Commenting on the statement of a New York doctor, that people can avoid taking the grip by keeping their mouths shut, The Houston Post cruelly remarks that they can also avoid making fools of themselves by doing the same thing.

#### "INTELLECTUAL CONFLUENCE" — OR, EACH FOR ALL

In his scholarly presidential address before the Tristate Medical Association of the Carolinas and Virginia, Dr. Edward C. Register made use of the newly coined expression, "*intellectual confluence*," and this term is so peculiarly suggestive that it deserves to be perpetuated. By this phrase, Doctor Register defines that state of mind "by which the ideas, discoveries, and experiences of the isolated individual seeker after truth find their way into the thought and usage of our whole profession." As the Doctor points out, "into the mind of a physician who rides on his errand of mercy in his isolated and sometimes lonely countryside, an idea falls, an experience comes—and there possibly a valuable discovery is made."

Then Doctor Register goes on to ask how such an idea or discovery may be placed at the disposal of our medical fraternity. As he clearly points out, there is not the slightest doubt that thousands of discoveries that might prove of vital interest to the world

have failed to germinate, because the soil was not provided in which these thought-seeds might develop.

"When we think," he continues, "by what a narrow margin of seeming accident most of our boasted medical science has been stumbled upon, our minds are filled with a sense of urgency to do everything to save, perpetuate, and safeguard as a golden treasure all those sometimes seemingly small contributions of experiment and experience that go to make the glory of our science." It is only when we shall be able to provide some means of *intellectual confluence*—to use the term coined by Doctor Register—that we can collect in common centers, for reference and utilization, the many happy thoughts that might be contributed by the thousands of individuals making up our medical body.

There are two principal methods by which this greatly to be desired end can be brought about to which Doctor Register refers—the first being through our medical societies; the second, through our medical journals. Both of these means are valuable, and both should be utilized to the fullest by every practitioner.

One thing that we have repeatedly urged upon the readers of CLINICAL MEDICINE is the value of this interchange of opinion through the columns of this journal. We want to make it the broad highway of intellectual confluence for the thousands of our readers who have no other adequate means of expression. We fully believe that there is not a physician—an earnest, thoughtful physician, we mean—who does not from time to time learn of something that would be simply invaluable to other physicians. Then, why does he not impart this knowledge? It is his duty to do so, and the means is within his reach.

We are glad that Doctor Register, in his splendid address, brought this matter again so powerfully to the attention of the medical profession. His paper should be read by every physician and its advice taken to heart. It is not the "big men" in the profession alone who can teach us; there is many a "cross-roads" country doctor, practicing in some out-of-the-way country district, far from the medical centers, who could give vastly more of practical advice to the rank and file of us than can many of our learned professors and bookwise "authorities."

CLINICAL MEDICINE aims, above everything else, to be helpful to the man in the field. If it has succeeded in that aim, it is mainly because its alert readers have wisely made of its columns a means of confluence,

a thesaurus, or treasure-trove, of the experience of the great number of busy men who have found in its open pages an opportunity within for telling their pregnant stories.

The men who are busy miss half of the woe that's hunting for victims to slay; they get all the cream in this valley below while idlers subsist on the whey; while fortune kicks others she'll give you a kiss, you'll win more applause and you'll know more of bliss, if you always keep pegging away.—*Walt Mason*

### OUR FRONTPIECE

The picture shown in our frontispiece is a reproduction of a painting by Mlle. Michaud, which was hung in the Paris salon two years ago, we believe, under the name "La Petite Malade"; that is, "The Little Patient." So far as we know, it has never heretofore been reproduced in this country. This copy was procured by us direct from our correspondent in Paris.

We hope that this picture will have a special appeal to many doctors and doctors' wives. We know nothing about Mlle. Michaud, the artist, but we are sure of this: she has really been in the sickroom and can appreciate the task of the doctor and can sympathize with those in sorrow and distress. The picture tells its own story. Look at that anxious mother's face.

If any of our readers desire copies of this picture suitable for framing, we shall be very glad to send them reprints, on good paper, mailed flat, at 10 cents a copy.

### LET'S GET ACTION ON THIS

During the last thirty days we have added more than five thousand new subscribers to our list. We want to make these brethren feel at home, and we want to show them how we all can and do strive together for the common good. Also, we want to get them into the habit of working with us. CLINICAL MEDICINE is a favorite with its readers because its columns are thrown open for the free interchange of opinion on all topics of practical interest—particularly as regards the therapy of every-day diseases. We know that thousands of you men out on the firing line can give us "cards and spades" on the handling of many troublesome ailments, little and big. Please consider this the heartiest, friendliest kind of an invitation for you to send in your contributions. The only conditions we make are that you cut out religious, political, and sectarian controversies, get right down to brass tacks, and write briefly and to the point.

In order to start the ball rolling, I suggest that some of you—many of you—tell us something about your practical experiences with the contagious diseases of childhood—scarlet-fever, measles, whooping-cough, mumps, and the like. These are very common during the spring months. However, if there is some other topic that appeals to you more, go to it. The essential thing is to get action, and get it quickly. The time is short, and we want many of these short, snappy articles.

You, too, are included in the invitation, new subscribers—and "welcome to our city!"

### ARMA VIRUMQUE CANO

Dearly as we may love peace, we must sooner or later realize that it is an impossibility without the mutual respect of all parties involved. The idealist may theorize on what human nature ought to be, and; indeed, the more he insists upon his ideals, the nearer we shall approximate thereto; still, in the end, old human nature—the Old Adam—remains the same.

It is, surely, instructive to study the Maxims of Ani, dating from Egypt's fourth dynasty (about a millennium before Eve presented Adam that disastrous apple-pie), and note how many of the wise saws of that ancient philosopher are applicable to the present-day generation. Take as an instance the warning the sage tenders the remote ancestor of Rameses, when Potiphar's wife sends word that her "old man" is away on a journey and that it will be safe to run up for a "cold bottle, a hot bird," etcetera. Compare with almost any daily paper of today—and you will agree that men and women are very much the same in every age the world over.

So, when our neighbor arms himself with automatics and maxims, we are compelled to discourage any thoughts he may have of aggression, by doing likewise. To any suggestion that we may disarm his greed by forbearance and nonresistance, we tender the unanswerable reply—China!

Universal armament in Germany forced universal armament in the rest of the continent; and at last in England, after a costly lesson on its neglect. We shall be compelled to follow, sooner or later; and, if the pacifists succeed in persuading us to postpone it, we shall surely pay for this a heavy toll of lives needlessly sacrificed.

The problem is so complicated here that we can not begin its discussion too soon.



How about the southern states with their huge negro population? It is our belief that the effect will prove beneficial. The negro is amenable to discipline, and the restraints of military service should render him submissive to law and disposed to uphold authority. During the Civil War, his attitude to the ruling whites was such as to illustrate his faithfulness and devotion—in fact, there is no finer example of his best qualities than was then afforded.

With the numerous races and peoples comprising our immigrant population, no better method of amalgamating the elements can be presented than this one of military service. The men who prepare for battle, side by side, become comrades for all future time. The pride of race that leads each to contribute his share to the general fund of warlike capabilities induces mutual respect and enhances the military value of all.

What chiefly interests us is, the opportunity offered to the medical profession. Already we have demonstrated the enormous value of modern medicine to the army, and we stand ready to extend this service as the opportunities widen. All previous wars have witnessed greater mortality and disablement from disease than from the weapons of enemies—our profession now has shown that we can prevent this condition and keep the soldier sound in the ranks. We have perfected the art of the surgeon far beyond what it was in preceding wars and stand ready to furnish an almost unlimited number of proficient practitioners for our armed people. We are ready to detect the carriers of army-pestilences and to prevent the occurrence of variola, dysentery, cholera, typhoid fever, typhus, tetanus, and of the many maladies that depend upon defective sanitation. We now know the etiologic relations of the fly, flea, louse, bedbug, tick, and mosquito, and how to render these insects innocuous. We can render impure or suspected waters potable; reduce the components of a ration to their lowest denominator by excluding the innutritious parts; protect the army against those other diseases that reduce its fighting numbers and qualities most seriously.

The greatest task yet to be solved is, the control of that conservative opposition that seeks to prevent the applications of our knowledge, by objections based upon ancient and obsolete beliefs. According to it, we must not relieve woman of the pangs of child-bearing, because it is written that she "must bear her child in anguish and sorrow;" we must permit the innocent and the guilty

alike to suffer from venereal diseases and thus see a material portion of our armies rendered useless—lest, forsooth, the prevention of this group of infections might lead our soldiers to an increased indulgence of the sexual passion, or of its augmentation—if that were possible.

The clouds of superstition pass away but slowly—it has not been so very long since a flight of crows would prevent the giving of battle. Every step of medical progress has been made in the face of opposition such as this; while no inconsiderable portion of our highly cultured citizens still looks upon resort to tangible, comprehensible, remedial science as essentially immoral. We may here risk affronting valued friends by suggesting that the prevention of yellow-fever in the Canal Zone was never accomplished by processions and saintly intercession; yet, the true Christian will only feel the wrong of attempting to saddle his faith with such absurdities, instead of utilizing the reason with which the Creator has endowed us.

Whether we like warlike preparation or not, is scarcely the question; but rather, whether impotent China or organized, disciplined Germany is to be our model. In any event, American medicine is ready for its duties.

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"It is probably true that a modified universal military training, so arranged as not to interfere with the education of young men for their future occupations in civil life, would be of advantage to this country, not only from the economic standpoint of physical and industrial efficiency, but psychologically, ~~and~~ a corrective of the lawlessness and ill-discipline which are among the greatest defects of American civilization."—*Boston Medical and Surgical Journal*. Do you agree?

#### MODERN MEDICINE IN MODERN WAR

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It is perhaps too early to begin boasting, but, with the saving precaution of giving three knocks on the arm of our chair, we cannot refrain from calling attention to the freedom of this war from typhoid fever. For the first time in the world's history, the embattled armies have been left free to kill each other. With shot and shell, shrapnel and bomb, deadly lyddite and suffocating chlorine, the contending warriors are at liberty to deal death and destruction upon each other, on sea and on land, under the waters of the briny seas and under the vaulting skies, and in the stygian bowels of Old Mother Earth—everywhere. Heretofore, doing their utmost, the bacilli of the typhic group have laughed the combatant's puny efforts to scorn. Microbes laugh? Why not? Did not Virchow declare

the individual cell possessed of volition? Then why deny it a sense of humor?

However, the immunizing bacterin has completely protected the warring hosts from the attacks of typhoid fever, and in this particular this product of the modern laboratory guards the rear and leaves the soldier free to devote his energies to the enemy in his front. The record of this typhoid-prophylactic vaccine assuredly must have silenced every doubter that still remained to block the path of progress. There is no room for further argument on this score, except as to the methods of fully utilizing the wondrous powers of this agency.

It is to the American doctor that we owe the most complete, the most spectacular triumph of our day. Here, in America, we know and dread typhoid fever; still, the very name of this malignant malady indicates its resemblance to a far more dread visitation—the true ship-, jail-, or army-typhus. A feeble and rather insignificant outshoot, known as Brill's disease, is the only form of typhus recognized in this country, but in Europe it has helped to beat down the resistance of Serbia's heroic mountaineers, and laid that country prostrate.

History is repeated—Rome crumbled before the onslaughts of her northern invaders only after the plague had left her a mere shell. But, while the Teuton hosts were gathering, America conquered their potent ally. Basing the campaign on the transmission of the infection exclusively by the body-louse, our medical Xanthippus eradicated this parasite and put an end to the epidemic. Too late to save Serbia from conquest, we, yet, delivered her from the added burden of typhus.

Now our desolate southern sister "republic," Mexico faces the same enemy, and it would seem to one who places common sense before all else that a similar conquest of typhus there would excuse the temporary occupation and administration of the distracted state that would be necessary for attaining that object.

Another outcome of modern serotherapy seems likely to be established by the great European war, namely, the utilization of tetanus-antitoxin as a prophylactic. Ordinarily we may question whether tetanus is likely enough to warrant the application of this remedy in every instance, when a wound seems capable of affording an avenue for ingress for this infection; but, in military hospitals, it is different. There, the tetanus infection may become universal, and, thus, the prophylactic value of the serum may be fairly established.

The enormous demand for iodine that has sprung up since Major Woodbury directed attention to the value of this agent has caused a hunt for substitutes. Bromine, tried out successfully in the latter years of our Civil War, is finding renewed utilization by German army surgeons. More abundant and cheaper than iodine, it is also more powerful as a germicide, although it demands more care in its use, to avoid undesirable effects.

War is surely hell. But, when the doctor does so much to alleviate war's miseries—while modesty forbids us doctors to claim angelic attributes—we may at least think of ourselves as not wholly satanic.

Be like the happy man who had  
A big cucumber vine,  
And when a white worm ate it off  
Did he sit down and whine?  
O, no! he took that hearty worm,  
Went to the lake and caught  
A monstrous fish that sold for more  
Than the vine would have brought.  
—Chester Wood in *The Nautilus*

#### NEW IDEAS ABOUT DIABETES

We particularly urge our readers to turn to the rather long abstract of some recent work on the treatment of diabetes, which will be found in this issue in the What Others Are Doing Department. As we have there pointed out, Dr. Frederick M. Allen, of the Rockefeller Institute, has been doing some very remarkable investigative-work upon this disease—work which has a basis of experiments with animals, but also has been worked out on a clinical scale sufficiently far to warrant fully the enthusiasm that is being lavished upon it.

While Doctor Allen's method of treatment is largely dietetic and does not involve, necessarily, the additional use of drugs, this subject is of such vital importance to the thousands and thousands of persons suffering from this disease that we wish every reader of *CLINICAL MEDICINE* to understand fully the method proposed, so that he can put it to the test in his own practice.

It may be—and undoubtedly is—too much to hope that a victim of diabetes can be cured; nor do we understand that any such assertion is made by Doctor Allen. What he does show, however, is that a very large percentage of these patients can be taught to live comfortably and to prolong their lives despite their affliction, provided they are able to control their dietetic regimen and to maintain a certain firm disciplinary hold

upon this all-important function of life—nutrition.

There is one thing about the Allen treatment which we are sure will appeal strongly to all the oldtime readers of this journal, namely, the insistence upon the importance of the alimentary canal as a factor in the production of its symptoms. The theories advanced by this investigator seem to us quite compatible—in fact, almost synonymous—with our years-old slogan: "Clean out, clean up, and keep clean." This contribution only strengthens our faith in the importance of watching closely the condition of the alimentary canal, in diabetes as well as in practically every other serious acute or chronic disease.

#### AN EARLY ADVOCATE OF ANTISEPTICS

Some two centuries ago, Bishop Berkeley published an essay in which he called attention to the medicinal properties of tar-water. At the time of his investigations, the Bishop was a resident of Newport, Rhode Island; consequently, we have here a true American discovery—made in America, with an American product. Moreover, Berkeley was one of the earlier arrivals of that immigrating people who have made so deep an impression upon our national life, the Irish Americans. (No hyphen, please!)

In "Siris," Berkeley made use of the following expressions, which now appear strangely prophetic:

"The seeds of things," he wrote, "seem to lie latent in the air, ready to appear and produce their kind whenever they light on a proper matrix . . . the air, every part of which seems replete with seeds of one kind or other. The whole atmosphere seems alive. There is everywhere acid to corrode and seed to engender."

In another place he says: "As the nerves are instruments of sensation, spasms in the nerves may produce all symptoms." And again:

"Tar-water is of great use for the nerves, curing twitches in the nervous fibres, cramps also, and numbness in the limbs, removing anxieties and promoting sleep."

Further on, the philosophic, yet, practical, bishop advises the use of tar-water as a substitute for the indiscriminate resort to alcohol, which he condemns emphatically, and especially voices his warning against intoxicants disguised as medicine. Our presentday protesters evince no clearer comprehension of the true inwardness of alcoholic nostrums,

like Peruna, than Berkeley did, the philosophic cleric, when writing, around 1715, in the log-house village of Newport.

Yet, it was not by accident that this profound thinker and prophetic seer had selected Rhode Island for his residence; for the historian, Ridpath, informs us that more than half a century before that date—in the year 1656—Dorothy Waugh, a Rhode Island Quakeress, was drummed out of New Amsterdam, tied to the tail of an ox cart, because she persisted, after due official warning to desist, in preaching in the streets of the town.

But, back to our story: Bishop Berkeley recommended tar-water for persons of delicate sensibilities, for those affected by low spirits, for splenics, for persons of sedentary habits. Incidentally he instances how he personally obtained relief from "nervous colic," which had rendered life a burden.

Thus, in this book of long ago, we find embodied some of our presentday beliefs—the modern beliefs—see clearly foreshadowed discoveries and developments of modern medical science by full two centuries. The bishop recognizes the ever present micro-organism; he also devines that dependence of disease in general upon the nervous system as nowadays insisted upon by the neurologist. He has acquired an effective antiseptic for use in gastrointestinal derangements and has found that this may give relief from such symptoms as mental depression, general malaise, and the like, which we now attribute to autotoxemia of gastrointestinal origin.

The modern belief that affections of the nervous system have their beginning in the feeding of the nerve-cells with feces-contaminated blood dates from Sir Lauder Brunton's teaching; yet, Berkeley directed attention to this thought.

It seems curious that this very practical observation should come from the man who, in his philosophical moods, contended that "matter has no independent existence, but is an idea in the supreme mind, which is realized in various forms by the human mind."

Moreover, at that early day, Bishop Berkeley predicted the coming greatness of America; and, in his poem entitled, "On the Prospect of Planting Arts and Learning in America," there occurs the fine stanza that has ornamented so many patriotic outbursts of oratory:

Westward the course of empire takes its way;  
The first four acts already past,  
A fifth shall close the drama with the day;  
Time's noblest offspring is the last.

# Leading Articles

## The American Clean-Up of Serbia

By the American Red Cross Sanitary Commission

By G. A. LURIE, M. D., Chicago, Illinois

*EDITORIAL NOTE.—Doctor Lurie is a Chicago physician who served with the American Red Cross Commission in Serbia during its campaign against typhus fever, cholera, smallpox, and the other infectious diseases which swept through that country. His story is a true record of the heroism of American doctors, nurses, and sanitary experts. No reader of "Clinical Medicine" should fail to go through this carefully.*

UPON the suggestion of the editor of CLINICAL MEDICINE, I will attempt to sketch briefly some of my experiences during the five months I was with the American Red Cross Sanitary Commission (Rockefeller Commission) in Serbia; to which I (the only physician from Chicago) became attached in the first week of June, 1915. I continued with the Commission until the middle of October, when, our task being practically finished and that suffering country cleaned up, in a sanitary sense, and the Commission largely disbanded, I proceeded to Paris, there to join, temporarily, the American Ambulance Hospital.

The typhus epidemic in Serbia was spread by the refugees coming from the north with the first invasion of the Austrian army, together with the prisoners, thus increasing the crowded conditions and making them ideal for typhus. Arriving at headquarters, my first assignment was to Tetova, with a Mr. Standifer as my associate; the latter for seven years a sanitary inspector in the Canal Zone. There our duty was to inspect and disinfect every house, barn, and carriage within a radius of seven miles, and also to inspect the hospitals, barracks, school houses and other public buildings in surrounding villages for smallpox, which was prevalent at that time. Of course we each had an interpreter. To tell the truth, the houses were filthy beyond description and swarmed with vermin and contagion.

### Vaccinating Against Smallpox, Cholera, and Typhoid

I was also tasked with vaccinating against smallpox every individual within our district, including soldiers, schoolchildren, mothers, and babies, besides all of the town and

county officials. The soldiers' barracks were the worst of all in point of filth, apparently not having been cleaned since the beginning of the second Balkan war.

After about two weeks there, I was sent to take charge of the vaccination ward in the second reserve military hospital at Uskub; and here we—another physician and I—broke all records for rapid-fire vaccination. We had to vaccinate—using Castellani tetra-vaccine (cholera, typhoid, paratyphoid A and B)—the soldiers quartered here prior to their leaving for the front; and we two thought nothing of disposing of 1200 men in the space of three hours.

The men's arms were washed, in readiness for the operation, by an Austrian prisoner, in private life a professor of philosophy. Another assistant for this work was a little Serbian lad, aged 14, who had been living in Austria. He ran away from home, got caught between the fighting lines, and was taken prisoner by the Serbians.

### Bathing and Disinfection

Next I was assigned to the bathing car. This is a unique and effective disease-preventive. We "cooked" about 300 men a day. The soldiers were told to strip in one car, then they were herded, 15 at a time, into the bath-car and the key was turned on them. For fifteen minutes they were soaked in live steam of rather high temperature. Then the men were ushered into another car, where under supervision they were forced (force was necessary!) to wash themselves well with hot water and soap, in preparation for a cold shower-bath.

A freight car which had previously been used as a refrigerator was used to steam the clothes, thus making an autoclave. The



The American Red Cross Sanitary Commission in camp at Velis, Serbia.

steam was generated in the next car, which contained a boiler. The clothes were steamed for ten minutes and then sprayed with a disinfectant composed of a creolin preparation diluted with  $H_2O$ . Before dressing, the men were required to rub themselves down with kerosene and saturate their hair. After this the interpreter delivered a lecture on the sterling virtues of taking an occasional bath.

Then I was assigned to Doctor Castellani's clinic at Skoplje, where I stayed two months. This Italian scientist, who is one of the world's best tropical-disease experts, was in his glory. Among other things, he discovered the microbe of sleeping-sickness. (At times we strongly suspected that this microbe was at work in Serbia, although we could never actually find it.) It is surprising how much tropical disease we found. We have had epidemic after epidemic of malaria, and with it a scarcity of quinine. One hospital in Gengelia resembled an insane asylum, all the patients suffering from malaria, shaking, shivering, and going through various acrobatic maneuvers, craving for just one bit of quinine. Tuberculosis is also very prevalent.

#### A Fight Against Typhoid Fever

Next I was detailed to go into camp at Prishtina, to investigate the typhoid epidemic at Novovaros and surrounding villages. Here I found sanitary conditions almost as bad as they well could be, especially in the prisoners' quarters, which were condemned. In Prishtina, four stables were disinfected and white-washed, the ground floor leveled and a building erected for lavatory, bath and laundry purposes. A room was made in each one for 300 prisoners. Here also barracks, schools and homes, as well as hospitals, were disin-

fected. In the latter the beds were cleaned, the old straw in the mattresses burned and replaced with fresh straw, and the bed clothes cleaned in an autoclave.

As a matter of fact, sanitation is practically unknown in Serbia; and so it is that, for instance, vessels containing milk are habitually left uncovered, thus allowing free access to flies and other objectionable things, and paving the way for epidemics.

As a rule the people were extremely hospitable, and I found them anxious to assist in stamping out an epidemic. However, in one place where typhoid had been reported epidemic (any rise of temperature would be called typhoid), although it turned out to be diphtheria, I had to stand, virtually, over the people with a club, to induce the families to clean out their wells and homes and open their windows, as they thought they would catch cold; also to build drains for the numerous pools of stagnant water, which had to be petiolized. Then the prefect, who is the mayor of the village, was instructed as to the value of disease-prevention, hygiene and sanitation, and was given several practical lessons on putting this theory into practice, by taking him to one of the homes.

#### Sanitary Precautions Unknown in Serbia

The Serbians knew nothing of the necessity of careful garbage and sewage disposal. All the streams were polluted and had to be cleaned out. Flies are considered almost as pets, well worth having about the house. A Serbian family often sleep in the same room with pigs. This is not considered conducive to good health in America.

Most Serbian houses consist of one room with a plain wood floor, where the cattle



sleep, the people thinking more of their cattle than of themselves. At one end of the house there is a small vestibule with a clay floor, in which there is a fire. As there is no chimney, the smoke goes out through the door, the roof being darkened by the sparks and smoke. Ten or a dozen—sometimes as many as twenty-five persons—sleep in this clay-covered vestibule, lying on a dirty homespun blanket near the fire.

After the first of October the windows are kept tightly closed all night, for the Serbians

Eventually every well and every other source of water supply in Serbia was examined by the doctors and inspectors of the American Sanitary Commission, and those found polluted were thoroughly cleaned. All contaminated wells were placarded, the people being forbidden to use them until the condition was corrected. Also, every stagnant pool was petrolized, to prevent the breeding of mosquitoes.

### The People and Their Country

The war has left the inhabitants in a state of squalor and want. Thus, horses and even saddles are a rarity, and, in going from one village to another, I generally had to foot it, although sometimes I had a mule for a mount, with a piece of hemp for reins. Once I had to ride that way many miles to headquarters for some diphtheria antitoxin. On another occasion, with a medical missionary from China as a companion, I rode for thirty-two hours in a springless wagon, called a "britchka," with a few handfuls of straw thrown on the floor for a bed. Nor were personal comforts any better. Most of the time I slept in a stable, sometimes with nothing but a log for a mattress, some Chicago newspapers for a pillow, and my raincoat for a sleeping-bag. While at Novovaros I never saw butter;



Dr. T. W. Jackson, Chief Sanitary Inspector.

fear that they will catch cold if they inhale one breath of fresh air after dark. In the mountainous districts clocks are unknown, time being told by the first evening star. In spite of these unhygienic conditions the people are strong, and display wonderful endurance. They go barefooted in zero weather, apparently without minding it.

Today there is no typhus in Serbia. However, the epidemic will probably return with the cold weather, but this time it will be kept under control. Nearly everyone in Serbia has had typhus, so most of them are now immune. I found records in the villages where I worked showing that whole families of 15 or 20 persons had been swept away by this disease, not being attended by a physician. In one house near Prishtina there lived 40 persons, and of these 19 died of typhus. In Bardovetz there were 1400 Austrian prisoners. These were confined in stables, and more than 1000 died. Men fell and died like flies, some of them dropping by the wayside going to their meals.



In the hair-cutting camp at Prishtina.

for one whole week I had to live exclusively on eggs and milk, meat being unobtainable.

I found the common people in the mountainous districts of Serbia very ignorant of personal hygiene. Drugs were not to be had anywhere, nor even known. I carried the most necessary drugs about with me, pur-



Vaccinating troops against cholera and typhoid fever prior to their departure for the front. We vaccinated 1200 in three hours

chased at my own expense, for the purpose of distributing them to those peasants who were in dire need. Strange as it may seem, many families whom I visited had never heard of a doctor, and thought I must have descended from heaven. One time I was stopped by a poor woman, who went down on her knees and begged me to attend to her son, a 19-year-old youth, whose leg had been broken three weeks before. I had to improvise a splint out of the bark of a tree, padded with raw wool, there being nothing else available.

I also encountered some terrible cases of ulcers and wounds which for years had received no other care than applications of dirty green leaves; it was the rule, instead of bandaging, for mothers to treat the wounds of their children by applying herbs and leaves. And so it went. It made me sick at heart to see all around such misery, such suffering, and, withal, such ignorance of the simplest tenets of civilization, these people living as they did centuries ago. Let us hope for better days in store.

#### **An Adventure and an Injury—Attacked by Bulgarians**

On September 1, I left Novovaros for Uritza by post-wagon (a fourteen hours' ride), with an escort of four gendarmes. En route, the party was attacked and fired at by a band of Bulgarian comitjadas. One of

the gendarmes told me to take his horse, and I galloped away at a terrific speed. In hurdling over an obstacle that had been placed in the road, my horse fell on top of me, causing an injury to the left eye and bodily bruises, with blood oozing from face and hands. I was treated in the hospital at Uritza by Doctor Cheattle, of Rockford, Illinois, where I was laid up for two weeks, the left eye being closed for ten days.

On another occasion I made a vaccination-tour, in company with another doctor, on a hand-car. On this trip we vaccinated some 1500 soldiers, between Veles and Ghevveli. The vaccinations were made in wooden huts stationed along the railway. As usual, the Bulgarians did not forget to utilize the opportunity, and, while we were traveling on the hand-car, my left ear was wounded and my hat literally riddled by bullets. One of the soldiers who was pumping the hand-car was shot in the hand and we had to assist in pumping.

Arriving in Skoplje after the perilous journey from Novovaros, I had a talk with General Popovitch, and I advised him to make preparations for the impending trouble with Bulgaria, as the secretary to the Russian embassy in Constantinople had told me in Novovaros that the Bulgarians were coming within 30 days. Also, while in Nish, I heard the noise of the cannon bombarding Belgrade



1. Doctor Taylor, of Panama. 2. Doctor Castellani. 3. Doctor Lurie.

and saw the flashes at night. I actually was supposed to be there at that time, but had previously been warned by the ministers at Nish not to go.

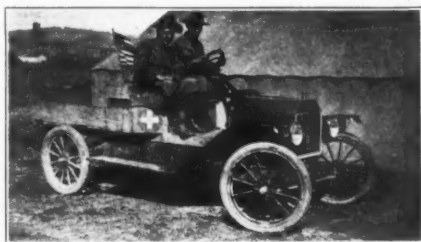
#### The Terrible Epidemic of Typhus

To recur to the prevalence of typhus fever in Serbia. Typhus is endemic in Serbia because of the exhaustion of the people from the many wars, and their ignorance and lack of instruction by their physicians, the number of whom has been lessened.

The recent typhus epidemic commenced in December, 1914, and lasted until July, 1915, and was the most severe in European history. Its spread was due to the unpardonable neglect of the Serbian civil and military authorities—a neglect which we here would punish as criminal. It would be utterly impossible to estimate the number afflicted with the disease, as many died unattended by a physician, and others recovered, also unattended. Besides, the statistics are not reliable, as any rise of temperature would be diagnosed as typhus. The military reports do not include the civilian population.

Out of a population of 3,000,000, in Serbia proper, including about 50,000 prisoners of war, one out of every four was

affected. The mortality in hospitals was as high as 50 percent. However, the number of cases of typhus must be an estimate only, since even many of the Serbian physicians diagnosed typhoid as typhus. The hospital and civilian population suffered from the lack of physicians and orderlies, thus making it very difficult to control the dreaded scourge. The mortality was terrible, and, in the community under my observation, to dispose of the dead, 10 to 15 ox carts, piled with coffins, made trips to the cemetery three times a day. The better class of people escaped the infection, as their hygienic conditions were better, although all classes and professions were affected. The American Red Cross and the foreign units managed their hospitals



Visiting the boys at the Columbus University Camp. Schoonmaker, of Harvard, at the wheel.

very much better as to system and discipline than the native organizations.

The medical profession in Serbia suffered immensely, due to their exhaustion and over-



Austrian prisoners making line. The man marked with a cross is a doctor of philosophy.

worked condition resulting from the care of the sick and wounded. Out of a total of 350 Serbian physicians, 175 succumbed to the scourge. Five American physicians were also added to the number of heroes who sacrifice their lives as heroically as those in the trenches. Out of 15 American nurses, 10 were affected, though, fortunately, none of them died.

During the second Balkan war typhus invaded Serbia, and subsequently has not been completely wiped out. The people were exhausted, and, as the army retreated, the civil population followed, thus overcrowding the already congested southern districts.

Bathing facilities were unknown to the peasants and lacking among the better class. These crowded and unhygienic as well as unsanitary conditions, together with the oncoming of the exhausted, starved and vermin-infested prisoners, who were distributed in the southern part of Serbia, made the situation ideal for the spread of typhus. Disinfection, quarantine, and isolation were criminally neglected. In hospitals two beds would be put together and three patients huddled on them. Every hospital was a hotbed of infection, as typhus patients were scattered among the wounded.

Much credit must be given to the world-wide-known sanitarian, Dr. Richard P. Strong, our director of the American Red

Cross Sanitary Commission, who worked day and night, unceasingly, getting transportable disinfecting and bathing apparatus to localities where they were most needed. It was he who devised the method of bathing soldiers in a freight car improved by installing 15 shower baths, and which was transported from town to town with the other two cars used for steaming the clothes at 250 degrees for ten minutes.

In the general cleanup a thorough sanitation of cities and villages was conducted, bath houses built, sewers dug, proper disposal of garbage and sewage demanded; school buildings and convents which were turned into hospitals were gradually abandoned and the patients put into hospitals in wards designated for them. Thus the spread of typhus was rapidly brought under control; and, as the warm days came, the soldiers, prisoners and civil population sought the open air and sunshine, leaving their crowded quarters and giving plenty of opportunity for personal as well as community hygiene.

I will close here by saying that I had the pleasure of a conference, in the University of Columbia camp at Nish, with Doctor Plotz of typhus-bacillus fame. At this interview, the Doctor informed me that an epidemic of typhus fever was likely soon to be prevalent again, and that he was organizing vaccination-stations in different districts throughout Serbia.

## Hematuria and Its Treatment

By CHARLES J. DRUECK, M. D., Chicago, Illinois

**H**EMATURIA (i. e., the presence of blood-corpuscles in the urine) is always pathological, and it appears in a number of different conditions. The blood may come from any part of the urinary tract, and sometimes the determination of its source is quite easy; still, at other times, this is very difficult, if not impossible. Not infrequently the physician is pinned down by the patient or his friends to name a definite diagnosis; where, however, this happens to differ from what has been previously offered by some other medical attendant, it disturbs the confidence of the patient. An example of this I shall cite further along, this happening in the case of a child which had been afflicted with hematuria for about a year and which had been said to be due to kidney disease. When I diagnosed cancer of the kidney, the family were very skeptical, and it was only after the

mother felt the tumor that she accepted my judgment.

The character of the blood in the urine and its time of appearance, whether clotted or diffused, profuse or scant, and its relation to the act of urination differ, and will indicate somewhat the part of the urinary tract involved. The chemical reaction of the urine also affects the color. (Acid urine is dark-red, while alkaline urine containing the same amount of blood will be bright in color.) Of course, if the amount of blood is small, it may not materially influence the color of the urine. However, the albumin-test will demonstrate even very minute traces of blood.

Guyon (see White and Martin) divides the causes of hematuria into trauma, congestion, inflammation, organic disease, and presence of foreign bodies. Sometimes the pathology

seems hardly sufficient to create the disturbance in the case at hand.

The amount of blood in the urine is variable. If slight, it may not show microscopically; but, if profuse, the urine appears bloody. The microscope is always required to verify the clinical picture. If the urine contains pus as well as blood, the blood will be found in the sediment, the liquid part of the urine being left uncolored.

The more dilute the urine is, the less rapidly will the blood clot, but also the more rapidly will it diffuse and dissolve. Blood clots in the urine have but little diagnostic significance except when they are of the long, thin, cylindrical variety. The latter resemble earthworms in appearance and are formed in the ureter. Short cylindrical clots are without significance. The color of the clots varies from yellowish-red to dark-red. The fibrin clots closely resemble broken pieces of cancer-tissue.

We will divide the sources of hemorrhage into (1) the kidney, including the ureter; (2) the bladder, and (3) the urethra. Let us now consider the causes in each class and draw the differential picture.

#### Hemorrhage From the Kidneys

It has been said that renal hemorrhage is more protracted than bleeding from the bladder or urethra; but that is uncertain. In all diseases of the urinary tract, the periods of bleeding become more frequent and intense as the disease advances.

1. In chronic diffuse inflammation of the kidney, there is no hemorrhage.

2. In the following conditions, the hemorrhage is slight, and it subsides as the other symptoms are relieved: Acute parenchymatous nephritis (this is frequently the results of accompaniment of variola or of scarlet-fever), amyloid degeneration, abscess, embolism, hydatids, purpura hemorrhagica, phlebitis (uterine or crural).

3. In this group, the hemorrhage is profuse and obstinate. Cystic disease of the kidney, chronic interstitial nephritis (here the hemorrhage frequently alternates with hemorrhage from mucous membranes), malignant disease (hemorrhage here is brought on by slight or undiscernable cause; it is made worse by exercise, but is not much relieved by rest).

Guyon says that the hemorrhage of kidney tumor is intermittent. It will stop and then suddenly reappear, the variations occurring frequently. Sometimes the ureter is blocked by a clot and the urine is clear for a few

hours, then the clot is suddenly released and the hematuria appears. The presence of renal casts shows positively that the blood is from the kidney. Tuberculosis of the kidney shows an intermittent hematuria, which is brought on by exertion; but the urine contains pus and debris, which remain in solution and do not tend to settle out. Pain is also present, but is variable, though sometimes amounting to a true renal colic.

The hematuria of renal calculus is excited by the slightest muscular strain or violence, such as under normal conditions would not cause any disturbance. The bleeding is promptly relieved by rest in bed. There is always more or less pain and renal colic, which is reflected from the lumbar region in various directions. The pain of renal colic is quickly relieved by rest in bed, but not the pain of tuberculosis or tumor.

4. Drugs may also cause hematuria, such as oil of turpentine, carbolic acid, cantharides, and mercury. It must not be forgotten that senna and rhubarb cause a reddish-brown color of the urine simulating hemorrhage.

5. In severe injuries and malignant disease, the blood may be bright-red and the hematuria may appear to be terminal. In trauma, the location and character of the injury will determine somewhat the source of the blood. That is, a kick in the back followed by hematuria would suggest a contused or lacerated kidney, while a blow on the abdomen, and particularly in the hypogastric region, would indicate a ruptured bladder. A heavy, dragging sensation due to the renal congestion sometimes precedes hemorrhage from these parts, or an attack of renal colic may appear. These pains do not occur in connection with hemorrhage from the bladder or urethra.

#### Hemorrhage From the Bladder

Associated with bladder lesions that cause hemorrhage, we usually find cystitis and an alkaline urine, and, if so, the mucopus and phosphates so cloud the urine as to alter its appearance and prevent the easy detection of blood. When the urine is ammoniacal, the hemoglobin is frequently dissolved out of the corpuscles, and the cells are then called blood-shadows. These are sometimes confusing when found in the urine. They appear as small bodies or rings of the size of red cells and have no nucleus.

1. The hematuria of vesical calculus is terminal and the blood is fresh. The hemorrhage is moderate unless prostatic disease complicates. (2) In prostatocystitis and (3)



in vesical tuberculosis there also occurs slight terminal hematuria, and in this symptom closely resemble calculus. (4) Polypi of the bladder and (5) fibrous tumors usually show slight or moderate hemorrhage, but (6) villous growths bleed profusely and the blood forms a reddish-brown sediment. A vesical tumor, so long as it is not near the bladder-neck, may not show any other symptom besides the hemorrhage, and it is not palpable in its early stage; hence, the hemorrhage is frequently considered renal. Of course, if the colic or some other localizing symptom appears, that will determine the source of the bleeding. (7) Varicose veins of the neck of the bladder sometimes rupture and cause quite a sharp, free hemorrhage.

A cystoscopic examination must be made in all doubtful cases of hematuria. When the hemorrhage comes from the bladder, there will be, besides the visible blood, frequent micriturition, as also pain in all inflammatory, obstructive or traumatic cases. A bimanual examination will frequently detect changes in the bladder-wall or prostate gland or the presence of a tumor. Vesical tumors ultimately necessitate catheterization, and then cystitis is soon added to the clinical picture. When the blood is diffused throughout the urine and the last portion of the urine contains a quantity of pure bright blood, it is probably a vesical or prostatic bleeding.

#### Hemorrhage From the Urethra

Hemorrhage from the urethra usually precedes the flow of the urine and also recurs between the acts of urination; but, if it does not, it may be squeezed out by stroking the urethra.

1. In acute gonorrhea, mild hemorrhages may occur in any case.
2. Acute posterior urethritis presents only terminal hematuria.
3. Chancre within the urethra sometimes causes hemorrhage that may be obstinate and recurrent.
4. Neoplasms and injuries of the urethra sometimes cause a hemorrhage that may be alarming.

In any case of hematuria, the signs and symptoms other than those of the urine itself must be considered, because the trouble may be outside of the urinary system. Blood appearing at the beginning of urination (initial hematuria), the later urine being clear, must come from the urethra. If the bleeding is from the prostatic urethra, it may flow into the bladder, and in this con-

dition the last urine is often almost pure blood (terminal hematuria).

#### The Treatment of Hematuria

The great variety of causes of hematuria divide themselves into those that must be treated therapeutically and those that can be arrested mechanically.

During the bleeding, the management consists in: Rest in bed, a liquid diet (butter-milk), and diluting drinks, in order to lessen the tendency to coagulation and promote a soft, free stool. Drugs by mouth are of doubtful value. Guyon gives oil of turpentine, 3 drops every four hours for six or eight doses. Ergot in full doses is also recommended; oil of erigeron and gallic acid have also been used. Any of these may be of value in moderate and persistent hemorrhage. In sudden profuse bleeding that threatens to exsanguinate the patient, give a full dose of morphine, to quiet the restlessness and anxiety. Next, empty the bladder with a catheter or suction-pump, as needed, and then irrigate with a hot antiseptic solution of silver nitrate (1 : 2000) or fluid extract of hydrastis, 1 ounce to the pint. After this, the catheter should be held in the bladder until the bleeding ceases. [Emetine is being used successfully.—Ed.]

If this does not control the bleeding, a perineal cystotomy should be performed, all clots removed and a drainage-tube inserted. This must be done under the most rigid asepsis, because the bladder is very liable to infection after the hemorrhage, and particularly so in cases of tuberculosis or neoplasms. Prostatic hemorrhage is often relieved by opium suppositories, as also by suprapubic compresses.

In conclusion, I wish to cite a few cases that may be of interest in this connection.

Case 1. C. H., a boy 12 years old. Four years previously he was vaccinated, and from that his parents date his trouble. About two years afterward, he had a hematuria, slight as to amount, every two days, for about a month. During this time, the parents say, he appeared healthy otherwise. For the next year, he had occasional attacks of hematuria, but most of the time the urine was normal. There is no record of the urine at this time, except the parents' statement. For about a year now the blood appeared constantly in the urine and increased in amount, until recently it was nearly always present and in large amounts. The urine at best was heavy and smoky-brown in color, and at times it seemed to be largely blood.

As his mother put it, "It is pure blood that runs from him." During the first year of this boy's illness no positive diagnosis could be made.

About six months ago a tumor of the right kidney become palpable and continued to enlarge until it nearly filled the right side of the abdomen. The boy suffered very little pain, experiencing only a dragging sensation in the region of the kidney. He became anemic and of a waxy appearance, and the features were distorted by the anasarca. One time he cut his hand with a knife, but, although the wound was one and one-half inches long and one-half inch deep, it bled no more than a scratch. During the time this boy was under my care I went through the whole list of drugs supposed to be good for hematuria, but not one had any effect.

When the boy died, we made a partial postmortem examination, when the right kidney was found of about the size of a coconut and somewhat the same shape. It was soft and boggy, quite friable and easily crumbled under the fingers. The pelvis of the kidney was filled with a granulating mass, but there were no blood clots, and but very little on section of the growth. I was rather surprised at this. The liver was small and did not present any apparent secondary growths. All of the abdominal organs were very pale. Death was really due to exsanguination. No inspection was made of the chest, as the parents objected. I was not permitted to take out the tumor, but section of a small piece showed it to be a sarcoma.

Case 2. Mrs. A., formerly a nurse. Following the birth of a baby, she was taken with paresis of the neck of the bladder, which persisted after she was up and about. She insisted on catheterizing herself. Later, there developed a sharp cystitis and also calculi. Every two days she voided bits of calcium-phosphate concretions, and as these pieces

broke away there occurred considerable free hemorrhage. Sometimes this hematuria would accompany only one urination, and again would be quite free. In this way, it was intermittent, but persistent, and blood-corpuses could be found in the urine at all times. Of course, it had a gradually exsanguinating effect.

I made a vesicovaginal opening and found the mucous membrane sheeted over with this stone deposit, beneath which the surface was ulcerated and granulating. Under local treatment and drainage, she soon recovered.

Case 3. About three years previously I had operated upon this 37-year-old man for hemorrhoids, which were internal and found so extensive that I removed considerable mucous membrane. The result was very satisfactory so far as the operation was concerned and the man has had no other rectal inconvenience since. When the bowels moved the first time after the operation (on the fourth day), there occurred a considerable terminal hematuria, and ever since then, whenever the bowels are constipated and the movements are accompanied by straining, there is danger of this hematuria. There are no other symptoms of any kind. The hematuria is always terminal and persists for the next few urinations. Sometimes it is quite sharp; and it may recur in two or three days or months may pass without a sign of bleeding. During the interval there frequently is no blood in the urine. The man frequently passes three or four months without any trouble, and once went eight months. The trouble is always brought on by constipation. He experiences so little trouble that he objects to a cystoscopic examination, hence, I have not made one. I believe this is a case of varicose veins about the neck of the bladder or the prostatic urethra, due to my operation upon the middle and superior hemorrhoidal veins when I removed the piles.

**A** VERY great part of the disputes in the world come from our having a very keen feeling of our own troubles, and a very dull feeling for our neighbor's; for, if the case were reversed, and our neighbor's condition became ours, ten to one our judgment would be reversed likewise.

—George Macdonald.

# Hypnotics in the Treatment of Inebriety

By T. D. CROTHERS, M. D., Hartford, Connecticut

*EDITORIAL NOTE.—Doctor Crothers is one of the men who always has something worth saying, and his experience with the drug addictions is very large, so that we can look to him as an authority on the subject of inebriety. Frankly, we don't agree with everything he says—and that's one of the reasons why we like his papers, and this one in particular.*

**HYPNOTICS** that relieve irritation and nervousness and produce sleep have been used from time immemorial, and the most prominent among them is opium which relieves pain, removes the sense of discomfort and exhaustion, and encourages sleep. Dover's powder is one of its familiar preparations and this has come to be looked upon, in practice, as almost a specific for catarrhal and febrile conditions.

Morphine, hypodermatically given for affections of the bowels, cramps, and various other spasmodic conditions, has attained an equal prominence. and its action is particularly fascinating because of the rapidity and certainty of its action.

## Morphine on the Battlefield

On the battle-fields of Europe, morphine is almost universally given as the first-aid to the wounded, to check shock and acute pain and relieve the profound exhaustion that follows after severe injury. It has proven to be one of the most valuable first-aids, and no bad after-effects are being noted, except in a very small proportion of cases, where the drug is evidently repellent, causing vomiting.

Persons dangerously wounded, when partially narcotized by morphine, can be carried to the rear with greater ease and comfort than when not so treated. It is found that even after morphine has been given to wounded men for several days, its withdrawal is not followed by any new symptoms.

No other alkaloid of opium or no other hypnotic has given such satisfactory results on the battle-field as morphine. In private life, it seems to be very different. Persons suffering from disturbances of digestion, resulting in acute pain and nausea, are often made very much worse by morphine, particularly after the hypnotic effects have passed away. On the other hand, the very complete relief which is given, produces a species of fascination that calls for its repetition.

Small doses of morphine exert a certain stimulating action upon the heart, together with a sedation that impresses the patient with its great value. Its cumulative action

is very marked in some cases. Thus, a patient given 1-8 of a grain of morphine once a day for several days may suddenly become narcotized and sleep two or three days, or he may become drowsy and inclined to fall asleep in monotonous surroundings. This is the cumulative action of the drug.

Codeine is much milder in its action than morphine and is often given where the latter produces nausea. It seems to have about the same sedative action, without its irritant effects. Heroin, dionin, pantopon, and more than a dozen other alkaloids and derivatives of opium all have a hypnotic action, while some of them exert a special influence upon certain organs. They are all dangerous, because the effects are largely unknown. Thus, a physician discovered that dionin had a remarkable effect on respiratory diseases and thought it was of the nature of a specific. Further examination proved that this particular action was owing to some unknown condition, and was by no means common.

## Apomorphine for Dipsomania

In cases of inebriety, apomorphine is very largely used as a relaxant and depressant in the stages of delirium and delusional excitement. This is called chemical restraint, and when the drug is given hypodermatically, in 1-10-grain doses, it is a powerful relaxant and depressant, producing stupor and sleep. Its action is so rapid, and the effects are so profound, that it has come to be a very common remedy in the treatment of acute alcoholism.

Its first effect is an intense nausea, eventuating in vomiting and possibly purging, also mental and physical depression, followed by sleep. The patient who is wildly delirious and combative succumbs at once to its nauseating and depressing effects. The heart drops, from 120 to 130 to 40 or 50 beats per minute, and the vascular tension also is immensely lowered. The stomach, bowels, and skin, all are excited to intense eliminative efforts. The patient sleeps a few hours and awakens markedly prostrated and willing to do anything his attendants may wish him. This prostration passes off in the course of two or three days.

Irregular physicians who conceal the drug impress the patient's mind with the narrowness of his escape from sudden death, and this suggestion often remains for a long time. Where the memory of the effects of this drug remain, the suggestion of the near approach to death is a very powerful factor for the future.

Attempts have been made to treat alcoholics with this drug alone, giving 1-40 or 1-50 of a grain at night time, this producing stupor or sleep, with very little nausea or depression. However, careful physicians soon abandon apomorphine as an alcohol cure, as full of danger and may cause possible collapse. In the hands of one practitioner several cases of fatal pneumonia followed the use of this drug. It evidently produced pneumoparesis. Several irregulars still continue to use it, more or less concealed. Fortunately, apomorphine is a very unstable compound and, unless used very soon after it is prepared, its effects will be uncertain or almost nil.

#### Morphine and Atropine

Morphine combined with atropine, 1-4 grain of the former and 1-150 grain of the latter, is a favorite combination for relieving the irritation and exhaustion following the withdrawal of alcohol. In some instances, the relief is so complete, that the patient insists upon using this drug afterward, and if he finds out what it is he soon becomes a morphine-taker. In some cases, there is a peculiar sensitiveness to the drug, with little or no after-effects. This combination is more or less dangerous, and when a patient is very enthusiastic of the value of certain drugs which have been given him after an alcoholic paroxysm it is safe to assume that some form of morphine and atropine has been given.

#### Chloral and "Knockouts"

Chloral is one of the hypnotics belonging to the alcohol family that is given very commonly after the withdrawal of alcohol. It is a powerful narcotic in doses of from 5 to 20 grains, and in many instances it produces a certain brief excitement, followed by profound depression. On awakening a few hours after it has been given, the patient complains of intense weariness, fatigue, and inability to do anything, even the most common duties of everyday life. The hypnosis may continue for two or three nights or days, or it may pass into a low-muttering delirium or confusional state, in which the patient will call for the drug again. Insomnia usually follows when the chloral is withdrawn.

It is a very dangerous drug because of its cumulative action, and whenever given should be watched carefully. In the last years, it has come into very common use in saloons and barrooms as a "knockout" drug. A capsule containing from 10 to 15 grains is dissolved in a glass of beer or spirits, and this given to boisterous patrons and persons who become very obtrusive and excitable in the saloon or have attacks of destructive delirium. The effect of this drug, in combination with the sedative effect of beer and spirits, is very marked in producing sudden hypnosis. The patient falls down anywhere, profoundly narcotized. He is carried out, sent to the station house or put in some out-of-the-way place to recover. The interval from the time he was in a certain saloon until he awakens is a permanent blank.

Formerly, saloons doing a large business retained the services of a policeman or strong man who prevented altercations and assaults from delirious customers. Now, the too-wise barkeeper empties a capsule containing 15 or 20 grains of chloral into the beer or spirits called for, and the subject is then urged to go out or to leave the premises. In a few moments, the fellow is quiet and goes off into a profound slumber. And there is no certainty that he will ever awaken from this sleep. Many persons taken to the station-house breathe their last in the cell. The heart is unable to overcome the profound depression from the combined spirits and chloral. The same thing will happen in hospitals where chloral is given without discrimination. A degree of stupor follows that is only overcome by most heroic efforts.

Cannabis indica is another such drug. Its effects are slower, but they last a long time. When given for its hypnotic effects, to remove the alcoholic craze, it may work quickly, bringing relief and partial stupor, or it may not be noticed for several hours afterward, then there occurs a sudden profound depression, with more or less delirium.

#### Belladonna—Atropine

Belladonna is another of the same uncertain class of drugs, the effects of which vary. Dilation of the pupils and constriction of the throat are always present, but with them occurs a most pronounced depression that goes down to the very verge of collapse. The heart apparently suffers most keenly, and the perturbations in its action indicate some local effect that is not very clear.

When continuously used for hypnotic or similar purposes, the effects of belladonna or

its alkaloids are very uncertain. There can be no question that for this purpose it is a dangerous drug and that a peculiar susceptibility to its effects is likely to be encountered at almost any time.

#### The Alcoholic Groups

In the alcoholic group, paraldehyde is probably the most valuable hypnotic to produce sleep. Its effects are very transient and more or less uncertain. Where the surroundings are favorable and the patient's mind is calmed by the prospect of long sleep, it works very well; however, its effects on digestion are more or less disturbing and irritating.

In the delirium from alcohol, it may be given with safety. Of the sulfonal group, trional, veronal, and sulfonal are most commonly used. Each of these has a peculiar action, and all of them are more or less cumulative, hence, their use requires caution and study. In small doses, they produce no visible effect. In large doses, the effect may be pronounced, the action being quick, and is followed by considerable headache and digestive disturbances. Veronal is also of this class that possibly may have cumulative actions, while these substances relieve the irritation and depression produced by spirits, they themselves not frequently cause other disorders, and are followed by symptoms which either refer to the drug itself or some latent conditions which the drug has awakened. In the treatment of inebriety, these drugs should be given with caution and for only a brief time and their particular action studied.

A number of chloral compounds, termed chloralamide, chloralose, hypnol, and dormiol, are all names for derivatives and combinations of chloral that are more or less uncertain in their effects.

#### The Bromides and Coal-Tar Derivatives

Of the salts, the bromides of potassium, sodium, ammonium, and magnesium are excellent sedatives and when given in large doses for a short time are followed by excellent results. The bromides, in the treatment of spirit and drug takers, have a special value, with very little after-effects. The coma which follows from their use is known as bromism, and this should be limited and never allowed to go very far. Some of the specific cures contain bromides. While under their influence the patient apparently recovers from the irritation and depression of the spirits, there appear symptoms of palsy

and paralysis that suggest a bromine origin. This condition can be readily removed by baths and eliminatives.

There is another group of hypnotics, among which phenacetin, acetanilid, pyramidon, aspirin, and also novaspirin are most prominent. Many of these are used with more or less success, but they are uncertain and dangerous when used for any length of time, and all of them may increase the very condition they are supposed to remove.

Prescriptions containing these drugs are favorites with quacks, and, while they relieve the insomnia and pain and cover up the conditions for the time, they should be regarded as dangerous.

#### Some of the Vegetable Nervines

Among the vegetable hypnotics, hops and sumbul are probably the mildest, although oftentimes they act with great power. They are harmless, in the sense of not disturbing the nutrition or vitality, except in a very limited degree, and can be given with safety.

Hyoscine, the alkaloid of hyoscyamus, is dangerous in alcoholism. While its effects are very pronounced and rapid, its after-effects upon cells and nerve-tissue are so marked and often so long-continued (and obviously due to this drug) that its use should be followed with the greatest of caution, and then but for a brief time. It has had a large reputation as a specific for removing the pronounced irritation that follows the removal of morphine, but there is an uncertainty in this direction, and an unexpected class of symptoms follow that suggest dangerous effects. The most prominent of these after-symptoms are: low grades of dementia, delusions, and anemia of the brain, with incoordination and a variety of motor symptoms.

Where belladonna and atropine are given in connection, there are witnessed marked palsys and very startling changes in the functional activities that cannot be accounted for as a result of the direct action of these drugs.

The coal-tar derivatives are heart depressants and should never be given to elderly persons or those who have marked heart and kidney diseases, and even then for only one or two doses.

#### General Reflections on Sedative Treatment

Opium in almost any form in small doses is far less dangerous than those just named; and, yet, the possibility of continuing its use must always be considered.



The attempt to treat drug and alcoholic patients by substitution of other drugs equally powerful is not followed by good results. The bromides, while producing distinct poisoning, can be readily eliminated, hence, are less dangerous. Probably of all the hypnotic measures and drugs that are supposed to have quieting effects, hot drinks, showers, douches, various forms of compresses, reclining in a warm bath of a temperature higher than the body, are the most practical and safe of all the means used. Chemical restraints and drug stupors, from palsy of the sensory and motor system, all have reactive effects, and these are to be considered.

Specific drugs of any kind for inebriety and drug taking are scientifically impossible. Up to the present time, drugs that are used conceal and cover up symptoms most commonly. Sulphate of magnesium probably is an exception. This, in many ways, acts as a sedative, by neutralizing and changing the chemical balance of cell and tissue. Long ago, gold was studied and found to be inferior to iron; but the latter, so highly extolled, has an exceedingly limited usefulness. Substituting narcotics for the irritating effects of alcohol, is not the removing of the causes, but simply a covering up and intensifying of the conditions, which would be removed if the causes were taken away.

Chemical hypnotics are always dangerous remedies, because their effects vary so widely. It is exceedingly doubtful if they can be used with any practical effect in cases of inebriety. Experience and a careful study indicate that the great variety of drugs included in the hypnotic family have a very limited action therapeutically. Empiricism has extolled them to a very high degree, but practical experience fails to show their usefulness as substitutes, correctives or remedies.

The inebriate is suffering from toxemias formed within and taken from without, and the only relief and comfort which come from the use of those drugs is narcotism, which covers up the real condition. While these

remedies have a value that is real in certain cases, there is a very narrow limit to this that ought to be recognized according to the conditions of the patient.

There are several vegetable drugs about which considerable literature has been accumulated, embodying more or less extravagant praise. Among them, are two called, in common language, the passion-flower (*passiflora*) and the bull-nettle (*solanum*). The extracts from both of these plants have a pronounced hypnotic effect, and they have been used as specifics; but practically, these effects are not uniform, and sometimes entirely absent, though sometimes positive and satisfactory. So far, little or no after-effects have been noticed from their continued use. They have no cumulative action, like some of the mineral drugs, but the system becomes used to them after a while. Like extracts of hops, their value is uncertain.

Most of the vegetable drugs are more powerful in infusion, than in the form of extracts. When given to inebriates as extracts, they carry with them a small proportion of alcohol, which in itself has a decided effect often very dangerous. The list of narcotics is increasing constantly, and where the extracts are made with acetic acid the spirit effect is obviated.

Practical men are constantly looking for some comparatively safe drug of the hypnotic class. Whether they will succeed in finding it, is a question, but at present the treatment of inebriety with hypnotic drugs should be conducted with great caution and a full recognition of the possibility of doing much more harm than good.

So far, hydropathy and electrotherapy are the most prominent and safest measures to be used in this condition.

[Doctor Crothers says nothing about the sedative action of solanine, the *alkaloid* of *solanum*. I wonder if he has given it a trial. Personally I have found it as efficient as the bromides, and just as safe. We shall be glad to get the experience of other physicians regarding the treatment of alcoholism.—ED.]



# Hints About the Automobile

For the Doctor Who Runs a Car

By A. L. BENEDICT, M. D., Buffalo, New York

**T**HIS article is written solely for the inexperienced.

In buying a car, two methods may be pursued: (1) Learn how much money you can raise on a mortgage, put that all into a car, then trust to Providence for enough more to run it. Or (2), take your average income as a basis, then estimate how much of this you can really afford to charge to transportation; but bear in mind that buying a car is only an initiation and that the annual dues in the fraternity of automobiles are from one-half to about one and a half times the cost of initiation. More specifically, the minimum upkeep cost of the smallest automobile, not considering motorcycles and cycle cars, is 3 cents a mile, distributed pretty equally among (1) gasoline (2) oil, (3) tires and (4) repairs incident to use; and insurance, garage-rent, and other items. A car costing \$2000 will have a mileage-cost of about 10 cents, while a large car, with chauffeur, will cost 30 cents per mile.

## Start With a New Car

Quite aside from considerations of pride, it is better to start with a new car, as the guarantee, while not approaching in value what you might expect from general experience with other kinds of purchases from reliable firms, does have a considerable value, probably more than you can save on a second-hand car, until you have had several years' experience. No car is foolproof. Eternal vigilance is necessary, not only to protect you from serious injury or from becoming a homicide, but to keep your expenses for repairs and maintenance within a reasonable allowance. The slightest carelessness on your part (quite aside from collisions) may spoil your engine, and you may be amazed to find that what you considered the extreme of caution has resulted in a bill not covered by the guarantee, because you have done something or left undone something as to which you have no conception.

Your first car is much more liable to be damaged than are later ones, and it will wear out quicker. The mere items of tips for making it go and of charges for adjustments scarcely warranting the name of repairs, and which you will subsequently effect yourself, will probably come to \$50 or even \$100 the first year.

Again, you will probably base your conception of caution in driving upon previous experience with a horse or bicycle. That is to say, you will drive at moderate speed, follow the ordinary rules of the road, do what is reasonable and sensible, occasionally stop or turn without looking behind you, fail to realize the danger from mud, rain, mist, and so on, and consider that others on the road will look out for you as you do for them—and you will have a bad accident. You have got to know what is going on before, behind, and at both sides of the road, all the time, must keep out of the way of drivers of commercial vehicles, speed-fiends, ladies and clergymen in electrics, and drunken drivers; and you will be surprised to learn that the greatest danger of all is, not the speeder, but the slow driver, and especially the man dozing on the seat behind a team of horses which amble along anywhere between the sides of the road and turn into private driveways whenever they please. Some have, doubtless, realized that the one-train-a-day railroad is more dangerous than the one that runs trains every few minutes, but they have not come back to tell us of their experience.

For all these reasons, your first car is relatively more vulnerable and more expensive in proportion to its first cost than are subsequent ones, and so, it is a wise plan to begin with a cheaper car than you can ultimately afford. Besides you will also then have spare money to purchase accessories, most of which will cost you more in indirect damage than their price. Buying a car and adding accessories to it is more or less on the order of marrying a man to reform him; but we all do it the first year, and some accessories, possibly 1 percent of all, are really useful.

The writer started with a cheap car, with the idea of getting a better one after learning how to take care of the various organs, and he is about to purchase the fourth consecutive car of the same make, because of the conviction that transportation is not worth more than the expense of such a vehicle, and that, on the whole, he cannot better himself short of a very expensive car and a mechanic to take care of it.

One further hint of choice of car may be given. Do not get a new and untried make. Do not get one that involves novel principles or that has ceased to be manufac-

tured. The more generally used a car is, the easier it is to get repairs and parts, especially at a distance from large towns.

#### Trouble with Cranking and Carburetors

Let us imagine that, like most tyros, you have bought the car early in the spring; that you have learned to run it, but have not gone far enough to be troubled as to shortage of water, oil, grease or gasolin. After your first long stop, the car does not start on the first or second cranking, as the agent said it would, nor on the third or fourth, which he assigned as the extreme limit. Let us further imagine that, after 20 or 30 crankings, you have not ruptured a blood-vessel, but are still interested in the car. It is possible that just as a pig on the endless chain of a slaughter house may not have been successfully stabbed, one of the several details of the car may have been missed in the same process, but this does not usually happen.

Nor is it probable that your troubles will be remedied, as one of the interested bystanders suggests, by putting in a battery. The car really does crank just about as well on the magneto, though you will put the same truth in the opposite way, that it cranks just as badly on the battery, if you do take the trouble to get one at this stage.

The chances are that the foolproof carburetor which is "perfectly adjusted for all conditions" gives too lean a mixture of gasolin and air for starting. This is almost certainly the case if, after priming three or four times, the engine sputters and dies out.

The carburetor contains a needle-valve that is closed to air by pulling the priming-rod and also by screwing down a brass disc on the dashboard. Cranking then draws in more gasolin and makes a richer mixture. Turn off the air by turning this disc to the right, just as you would turn off any normal screw device. You will see, by raising the hood, how the connection is made. If the disc will not turn, it is because the connecting rod is locked by a nut on top of the carburetor, near where the rods join it. Loosen this slightly. Mark an arrow on the disc with a pencil and open up the carburetor 1 1-2 full turns if the temperature is below freezing, 1 1-4 if 30 to 40, 1 if 40 to 60. These arcs are merely approximate. Then prime while cranking four quarter-turns, letting the primer-wire slip back if the engine starts. If it does not start, it should do so within two or three quarter-turns more. However, with the engine thoroughly cold, there is practically no danger of "flooding," and, if the sparking

system is not in good condition, one may prime 20 times before starting.

But, the main thing is, to have a rich mixture; and, whether for starting or for increased power on hills, this is better secured by regulation of the spindle-valve than by priming. A dash-priming-cup or spark-plugs with faucets may be used for priming by direct admission of liquid gasolin; still, priming by suction through cranking in gasolin, with the air shut off from the carburetor, really works as well.

Remember that all this applies to a *cold* engine. As soon as it is heated by running, turn down the spindle-valve to, say, 1 full turn for cold weather and 3-4 turn for warm weather, or, for steady runs at high speed or even less so long as the engine runs smoothly and there is no "spitting" and "coughing." In cold weather, it is usually necessary to prime once to start even after a few minutes, and twice after about fifteen minutes.

Your next unpleasant experience, short of accident or failure to supply gasolin, water, and oil, will be that you cannot start at all, especially after kind but unskilful Samaritans have cranked for you and opened up the carburetor. The probability then is that the sparking-system is not in good condition and, in addition, that the engine has been flooded. If this latter term once is thoroughly understood, it will be of practical benefit. The figure suggests a liquid, but no amount of liquid gasolin short of filling the cylinders will "flood" an engine. Flooding signifies the supersaturation of the air with gasolin vapor, so that the mixture is not properly explosive. Hence, it is not likely to occur when the engine is cold and in cold weather, but it will occur under either or both opposite conditions after a few ordinary crankings, if, for any reason, the spark does not explode the mixture. It may happen that after you yourself are cooled off, the engine has also cooled off, so that enough gasolin has condensed to leave a properly explosive mixture, and then the next crank may start it without trouble or also the sparking-system may continue to cause failure.

#### The Sparker

The electric current takes its course from (low tension) magneto or battery to a set of Ruhmkorf coils; thence to the commutator, or timer, in which a roller, revolved by the engine, makes and breaks a connection with terminals on the inner circumference; thence to the spark-plugs, leaping a gap through the gasolin vapor to the outer wall of the spark-

plugs that are screwed into the solid wall of the engine, and this grounds the circuit.

There may be an inherent defect in the magneto (rare) or the magneto may have been wet (uncommon and spontaneously relieved in many instances simply by standing). Corresponding defects in the battery-current are common, as from exhaustion of the charge of a storage battery or drycells, or any one of the latter (four being usually employed), or from loose connections.

One can tell by the buzz of the coils whether the battery-current is efficient; and, if the engine once is running, by switching from one to the other source of electricity, this part of the circuit can be differentiated from distal parts. A conducting wire may be broken anywhere, but this is rare and usually easily detected. A loose, dirty, greasy connection at any binding-post will interfere with the current. The first can be detected by trying to twist the terminal in the post, the latter, by inspection. Terminals to posts should be brightened occasionally with emery cloth or fine sandpaper or a file, but, if tight, lack of luster is not a common cause of failure of passage of current, while grease over a tight connection does not usually interfere and for certain posts is almost inevitable.

#### A Lot of Trouble-Spots to Look After

If the battery does not work, loose connections are usually easily detected, and lack of voltage can be determined for each cell by means of a tester or even by making a connection through the wet finger or the tongue. Granted that the battery is all right, the trouble is usually at one of the two ends of the wire from the magneto, one under the floor and the other in front of the dash, under the hood. It may also be under the key-plate in the coil-box. If there is no battery or it is out of order, these places should also be inspected. Next, inspect the binding-posts for the units (4 in ordinary cheap cars) under the hood, on the dash, on top of the spark-plugs, and at the timer.

#### Managing the Spark-Plug and Coil

If the engine can be made to go, but works unevenly, the trouble is usually at one of three places: a coil, a spark-plug, or a timer connection. Allow a moderate feed of gasoline and advance the spark, uncover the coils and hold down three at a time. If the single unit allows the engine to chug for a minute or two, the corresponding set of units may be considered to be all right. If the engine

stops or there is a hiss, a cloud of smoke from under the hood and then a stoppage, the trouble is with that set of units, and, in the latter case, the particular spark-plug is probably loose somewhere.

The coils from your right to left correspond to the spark-plugs from front to back. By shifting coils in the box, if the unit that is at fault changes correspondingly, the trouble is almost certainly with a coil and usually owing to an oxidation of the coil-points. File them with a flexible nail-file (which should always be at hand) until the opposite points are smooth, flat, and bright. This procedure will be necessary every few months or often every few days, depending upon the qualities of the coil. This may be all that is necessary. If the coil is still dead—that is, if no spark passes between the points, or if a broad sputtering spark occurs, the distance between the points must be adjusted, not forgetting that there is an obvious device for setting them. As a rough rule, the points should be four turns of the set nut apart from the point at which they are just in contact, as determined by sighting between them at a light. Until you have acquired considerable experience, file and adjust one coil at a time, for otherwise you may put them all out of commission.

If, on the other hand, shifting the coils does not alter the location of the nonfiring unit, the trouble is almost certainly with the spark-plug. With the forceps (as a general rule, nothing about an automobile can be made tight enough with your fingers), loosen the nut that holds the wire to this spark-plug, then shift the wire up somewhere out of the way. Next, with a small wrench, loosen the upper part of the spark-plug so that it can afterward be removed without using a vise. Then, with the regular spark-plug-wrench, remove the base of the spark-plug.

Inside, it always looks dirty and greasy, but, if there has formed a deposit of soot, or if the two terminals inside are too close or too far apart, or if the porcelain is cracked, it will not spark properly. Unless you are expert, insert a new, properly adjusted spark-plug—three or four of which should always be carried. Use the spark-plug recommended by the manufacturer; do not try bargains or fancy types, unless thoroughly tested by disinterested persons.

Now, if the engine is hot, use about all the strength you have in screwing in the spark-plug, but be careful that the wrench does not slip, which may cause damage to other parts or hurt your hands. One of the proud-

est moments of the writer was when a mechanic told him he had got a spark-plug in so tight that it was almost impossible to remove it; but this had been inserted with the engine cold and had become set by rust. Then connect the wire. If the terminal keeps on turning after the round nut is screwed down tight, it is because a nut below, over a compression-washer, is not tight. Use a forceps for this, and do not apply too much force, lest you crack the porcelain.

Later, you can clean spark-plugs fairly well by soaking them in gasoline or carbon-solvent and wiping them, then filing the terminals and scraping out any soot. The terminals should be adjusted so that a dime can just pass between them, with light pressure. Later still, you can clean spark-plugs more thoroughly by taking them apart and re-assembling; noting carefully, however, the exact arrangement of parts and studying their functions.

A spark-plug may spark all right, but the corresponding cylinder may not give efficient service, because of a crack, carbon deposit, imperfect action of valves or leakage around any of the joints of the plug. Valve grinding is something with which the amateur should not meddle, and, so, it will not be considered here beyond stating that the general opinion is that valves do not need to be ground as long as compression is good, that is to say, till the crank turns too easily. Leakage about a spark-plug can be tested by applying oil or water and watching for bubbles.

#### Then the Timer, Too

Sparking defects may also be owing to trouble with the timer and its connections. The rods holding the timer in place or regulating the advancement and retarding of the spark may make a short-circuit with a timer-terminal, or also a self (?) starter or other device attached beneath the timer may do the same. The timer may be dry or gummed up with oil. The one lubricant that in the writer's experience has proved satisfactory is, pure mineral oil, allowing about 1 Cc. or 1-4 dram, for every 200 miles. With this provision, the timer may go several thousand miles without being cleaned.

Even only to detect loose and greasy connections, it is usually necessary to remove the timer. While in a sense the timer is a delicate mechanism, there is no danger in removing it if reasonable care be used, particularly to observe the position in which it should be replaced by the vertical alinement of the central attachment and the oil-aperture,

and the order in which the various parts of the attaching assembly go. It is just as important, though, to keep the timer clean on the outside as well as inside.

If it becomes necessary to remove the terminal wires for cleaning, removal of grease, rewinding of the end, and so on, do so one at a time, in order to prevent confusion. Theoretically, timer trouble affects one particular spark-plug, permanently. Practically, a lump of grease and dirt or a short-circuit may come in contact with a different terminal.

#### Care of Transmission Brakes—Safety First

It is important to remember that, in operation, the brake, transmission and all devices controlling movement must be applied gently and gradually, in order to avoid any sudden and jerky action of the machine; except, of course, when one may have to stop suddenly. Be sure that you understand the working and principles back of all of these contrivances and the exact way in which they are operated. Until you can control them automatically, do not speed, and when crossing streets "run on neutral." Rehearse for possible emergencies. Also, get it thoroughly fixed in your mind that the "emergency"-brake is not what it is called, but is to be applied solely either for locking the car at a standstill or to save the service-brake in descending a hill. Do not take the meaning of "right of way" too seriously; rather, at the beginning, cultivate the spirit of "After you, my dear Gaston." Remember that either brake works, ultimately, by friction of the rear tires upon the road, that any undue and sudden use of the brakes wears out the tires quite rapidly, and that, if the road is slippery, no kind of brake can stop your car. Do not use the brake and the reverse together. If the emergency is so great as to warrant reversing while moving forward, at the risk of doing serious damage to the machinery, do not spoil the effectiveness of the reverse by braking at the same time.

If any of the moving and braking-devices work jerkily or do not engage, have them fixed immediately, especially before undertaking a long or hilly trip. A little slack may be easily taken up by removing the floor, the cover of the gear-case, and with a wrench turning certain adjustment-nuts. You can see how they work, by careful inspection. This is only of temporary service, and new bands will soon be required. Undue wearing of transmission and brake-bands may, for example, be due to insufficient oiling, because



the pet cock or gauge indicator is not accurately set for that particular car.

On long descents, the engine may be used as a brake by turning off the spark; the high-speed operation of the engine offering moderate resistance, and the low speed still more. The engine will crank itself upon turning on the spark; however, the accumulated gas is likely to burst the muffler. Simply shutting off the gas at the throttle will not prevent this, but it can be prevented by turning the spindle valve shut or by coming to a full stop and allowing the engine to cool, then cranking up. For example, going down a very long and steep hill, it was found that both brakes were inefficient. The road ended in a T at a state road. In this emergency, the spark was turned off and the low speed put into operation. This reduced the speed to a comparatively safe degree and the brakes held sufficiently to stop the car when level was reached. Had any obstruction been encountered, such as a wagon in the road, the reverse, which wears longer because of being less used, could have been used, with light pressure, as a brake.

The amount of oil used up by the engine differs for different cars, being more for air-cooled engines than for water-cooled, ranging from 400 miles per gallon for cheap cars to 1000 miles for the better grade. The oil level should usually be taken on a level road or floor, an allowance of several minutes being made at least every 50 miles, for the oil to gain its actual level after the engine is shut off, if the gauge level is affected by running the engine. Supply oil rather frequently and in small quantities, to prevent fouling of the spark-plugs. Always carry enough for a trip, unless it be a very long one and includes stops where a supply can be obtained. Do not spill any oil, or, if you do, clean it up immediately. Carry enough so that, if a gauge-glass breaks and the case is drained, it can be refilled.

Pet-cock gauges under the car may break from the upturning of a loose stone; so, inspect, if you hear a noise of this significance. This is a rare accident and almost impossible if a mailing-case or some similar device is applied over the glass. Pet-cock gauges are more reliable than those indicating through long stems on floats, but they should be cleaned occasionally, and the oil level must be sighted against a good light after the glass becomes stained. If the gauge apparently indicates an impossible economy in oil consumed, investigate, as there may be a stop-page somewhere.

Greasings and oilings should be standardized at 50, 100, 200, 500, 1000, and 5000 miles, as indicated by the cyclometer for total mileage. A few miles make no difference, but keep close to the even numbers. Grease can be carried in an ordinary ointment jar. Learn what lubrications are necessary and what do not affect the running and wear of parts. Some cars require only engine oil and grease for all other lubrications.

Water or, in cold weather, wood-alcohol of 10 to 30 percent, should be supplied to the radiator at least every hundred miles, oftener for very hot weather or much driving on low gear. Use soft, clean water, straining it if it is obtained from a pump. Watch the rubber connections for leaks, especially if your car leaves a little puddle when it stands, although in cold weather condensed vapor from highly volatile alcohol mixtures will usually deposit a little water or ice beneath the radiator. Boiling occurs inevitably with some cars in hill climbing on low speed, but it may also result from a broken fan-belt, which latter should be inspected occasionally. In cold weather, use a hood-cover, but keep it open in front when running, unless for very short distances. Boiling often indicates too little or too dirty and thick engine oil.

Keep the water level in the radiator a little low in cold weather; know how much of it your radiation system holds altogether; start with a 10 percent wood-alcohol mixture, which will prevent freezing, down to 18° F., and in case of further descent of temperature add pure wood-alcohol to strengthen the mixture, as calculated algebraically, so as to withstand any degree of cold. Every increase of 5 percent in the wood-alcohol percentage reduces the freezing point about 10° F. Of course, the alcohol must be added before freezing occurs and just before the engine is to run again, so as to secure diffusion. A 30 percent wood-alcohol will protect down to -5° F. Glycerin, about a quart for a radiator, prevents, to a large degree, the volatilization of alcohols at a higher rate than water. It is expensive, and, by using a 1 : 9 solution of wood-alcohol and counting it as 10 percent, the excess volatilization is approximately balanced. Wood-alcohol has a slightly greater protective action against freezing than denatured ethyl-alcohol, while costing the same. In the spring, simply add water to the wood-alcohol mixture in the radiator until all danger of freezing is past, then drain and wash out the radiator. As water costs nothing, repeat the process every month or so during the summer.

# Cystitis and Its Treatment

By GEORGE H. CANDLER, M. D., Chicago, Illinois

Author of "Everyday Diseases of Children"

[Continued from page 144, February issue]

AS HAS already been stated, to cure chronic cystitis may or may not be a simple matter, everything depending upon the causative condition. It is remarkable how quickly a hitherto rebellious cystitis will disappear when a stricture is dilated, a calculus removed or a gonorrheal infection controlled.

Not at all infrequently prostatic hypertrophy is the *causa causans* and massage of the gland, the use of the psychrophore and high-frequency (rarely the galvanic) current, together with a course of chromium sulphate internally, will prove promptly curative. Unfortunately, however, the annoying cystitis accompanying true senile prostatitis is controlled with extreme difficulty, if at all. The hypertrophied prostate causes retention and, as a result of the degenerative change, which has occurred, it is impossible to effect reduction of the enlarged gland.

I have, however, succeeded in giving very great relief to patients so afflicted by emptying the bladder and irrigating with a warm boric-acid solution, consisting of 1 dram of the acid to 10 ounces of water. This fluid should be withdrawn and 1 dram of a solution of thymol iodide in a purified cottonseed oil base injected and allowed to remain until voided at the next urination. If the urine is very foul and ammoniacal, 5 to 10 grains of boric acid should be given three times a day for one week and then be replaced by arbutin, grs. 2; hexamethylenamine, grs. 5; eupurpuroid, gr. 1-3. In all these cases the bacillus-coli or the Van Cott combined bacterin may be administered with advantage.

Under such medication three or four irrigations usually produce a very marked improvement; indeed, patients quite often state thereafter that they experience little or no distress beyond difficult and frequent micturition. Naturally, some cases prove more rebellious than others and now and then we are compelled to advise operation or regretfully consent to the induction of catheter life.

It is well, perhaps, in passing, to impress again upon the physician the absolute necessity of an aseptic technic. It will not do to insert a sterile soft-rubber catheter and then place the irrigating solution in a half-cleansed

syringe. Further, every precaution will be nullified if the hands of the operator, meatus, and urethra of the patient are unclean.

I have seen catheters dipped in carbolyzed oil, held under the hot-water tap for a few moments, finally lubricated with glycerin, and passed (with considerable difficulty and manipulation) through an uncleansed urethra. Quite naturally, doctor and patient agreed that washing out the bladder "didn't do much good." After using, rubber catheters should be cleansed in a lysol solution, the fluid being forced through the lumen with a hard-rubber syringe, then rinsed in boiled water and kept in a 1 to 2000 chinol solution. Before insertion, the tip may be lubricated with boric petrolatum. Metal or glass recurrent catheters can be boiled or sterilized by dry heat.

Before any instrument is introduced the patient should urinate and wash the glans and prepuce thoroughly with warm water and soap. The physician then irrigates the urethra with any mild antiseptic and covers the penis with two thicknesses of sterile gauze. A small opening is made over the meatus and through this the catheter (also held in gauze) is introduced carefully. When the long-nozzled, hard-rubber syringe is used to instill the thymol-iodide mixture, equal pains should be taken to maintain asepsis.

## Methods of Irrigating the Bladder

There are several ways of irrigating the bladder: At the office, the Janet method may be employed, but for patients treated at home (as many of them must be) the physician will depend upon the catheter and fountain or piston syringe. Wherever urethritis and cystitis coexist, the Janet method should be employed, if possible; also, where there is a pronounced stricture (which should be dilated or incised) or where the passage of the catheter causes hemorrhage. A blunt tip, shield, and cut-off can be easily carried and kept surgically clean, and enameled metal reservoirs are cheap and readily obtainable.

The regular fountain syringe may, of course, be used with a proper tip and shield, but on no account should the "household outfit" be employed. A 6-ounce, glass-barrelled syringe serves excellently for ordinary bladder washing. When filled, the nozzle is inserted into the orifice of a 12- or 14-gauge French

catheter already passed, and the fluid is expelled into the bladder in jets—say one ounce at a time. The bladder must not be overdistended and care should be taken to introduce the solution without undue force. In certain cases, irrigation can be more satisfactorily performed by means of a fountain syringe with cut-off and tapering tip.

#### Local Antiseptics in General Use

Naturally, different conditions demand different remedies and a host of agents have been used locally in the various forms of cystitis. Boric acid is cleansing, soothing, and non-toxic; chinolol, from 1 to 1000 to 1 to 2000, is decidedly bactericidal; formalin, 1 to 5000, may be employed with advantage where there is much pus in the bladder; permanganate of potash, 1 to 3000, is useful if a urethritis is present; bichloride of mercury is effective, but must be used with extreme caution.

This last-named drug is particularly undesirable where erosions or breaks of the vesical mucosa exist or where it is practically impossible to withdraw *all* the fluid injected. It has been stated that absorption does not take place from the bladder, but knowledge of more than one case of bichloride poisoning following irrigation with 1 to 2000 mercury solution leads this writer to hold a different opinion.

#### Some of the Silver Preparations—and Others

Probably the three most useful drugs are boric acid, ichthylol, and silver nitrate, but argyrol may in some cases replace the latter. Silver nitrate may be used in the proportion of 1 to 1000 to 1 to 5000. It is usually advisable to commence with the weaker solution and increase carefully. If irritation is apparent the bladder should be washed out immediately with physiologic salt-solution. The best results follow semi-weekly irrigations, although, if the bladder is tolerant, every other day is not too often.

Argyrol and protargol are rarely used save for small injections of one or two drams—the first in 5 to 20 percent and the latter in 1 to 5 percent solution. Not a few G. U. men first wash out the bladder with silver-nitrate solution and then inject the smaller quantity of argyrol or protargol solution. Oily preparations should not be used after any of the silver salts. I am not prepared

to explain why a reaction occurs, but it almost invariably does, and the patient will complain of intense pain for several hours.

In retention-cystitis of old or middle-aged men, with more or less hematuria and intense burning or spasm after micturition, nothing affords greater relief than irrigation with calendula and hamamelis. First, of course, the viscus should be thoroughly cleansed with boric-acid solution and any alkalinity of the urine corrected by appropriate internal medication. After three ordinary irrigations, and a week's use of arbutin and hexamethylenamine, inject every second day 4 ounces of the following solution: Aq. ext. hamamelis, oz. 1-2; aq. ext. calendula officinalis, oz. 1-2; aqua dest. q. s. ad ozs. 4. Even better results follow substitution of calenduline (Lowry), which contains in addition to calendula a soluble bismuth salt and a very small quantity of resorcinol. It is used in the same proportions.

Under such medication, even small but extremely troublesome ulcers have healed within a month.

#### In Irritable or Tuberculous Bladders

In extremely irritable or tuberculous bladders gomenol oil is used in 10 to 50 percent solutions. It is decidedly to be preferred to the old iodoform emulsion, but in my opinion inferior to euarol, i. e., thymol iodide in oil.

None of these measures will prove curative or even materially beneficial, however, unless gross lesions are recognized and corrected. For instance, a urethra so contracted at any point that it will not permit the passage of a 28 or 30 French-gauge catheter calls for the use of sounds or dilator. Should these fail, external or internal urethrotomy will be necessary. Again, even daily irrigation will fail to relieve (even if it does not aggravate) the cystitis accompanying the more pronounced form of prostatic hypertrophy. It is safe to say that when the projecting gland causes the constant retention of one or two ounces of urine, enucleation is essential—provided always that the physical condition of the patient is sufficiently good to warrant subjecting him to the unavoidable shock of such an operation. Vesical calculi and tumors should also be removed as soon as possible. Later, the concomitant cystitis can be treated effectively.



# What the General Practitioner Can Do in the Treatment of Chronic Diseases

By GEORGE F. BUTLER, M. D., Kramer, Indiana

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**EDITORIAL NOTE.**—This is the second paper in the series of articles upon chronic diseases which Doctor Butler is contributing to "Clinical Medicine." The first paper appeared in January. On account of the Doctor's temporary illness, we were compelled to omit the second installment from the February issue. Hereafter we hope to be able to present a paper upon this topic from Doctor Butler's pen, every month, for some time to come.

[Continued from page 44, January issue]

## Focal Infections

THE relation of focal infections to chronic diseases and the means of detecting them are important.

It is now generally believed that the majority of chronic diseases begin in some infective focus. We know that syphilis, tuberculosis, and many others begin locally; and besides these there are many that very probably begin locally, although this has not as yet been fully demonstrated. However, we must search for an infective focus and, if found, remove the same if possible. It is fairly well proven that endocarditis, myocarditis, pericarditis, and chronic arthritis arise from some focus; and these foci may be about the teeth, tonsils, accessory nasal cavities, prostate gland, genitourinary tract, gall-bladder, and intestine.

In the prognosis of these cases, however, we must remember that a supposedly causative focus found and eliminated may not result in recovery, for there may be other unknown causes or the focus found may not be the one at fault.

Cholecystitis, nephritis, "neuralgia," neuritis, and certain of the anemias may depend for their existence upon obscure foci of infection. No case obscure in origin should be passed over without diligent search for some focus of infection.

Among the innumerable bacteria responsible for many of the chronic diseases, the streptococcus-pneumococcus group predominates. This does not deny any causative relationship to other organisms, but indicates a strong predilection on the part of this particular group to produce focal infections and to resist destruction. The recent discovery by Smith and Barrett of an endameba in alveolar pyorrhea—and confirmed by other writers—shows that other organisms may be causative factors. In an exhaustive paper on the elective localization of streptococci, published by Rosenow in *The Journal of the American Medical Association* for No-

vember 13, 1915, the author, in closing, says:

"The results detailed in this and previous papers seem to bring necessary experimental proof that chronic foci of infection play a most important role in causing systemic disease, a fact which has been observed and frequently commented upon by different observers, but has been recognized in its full clinical significance especially by Billings. A focus, such as a pocket in the tonsil, which cannot heal for mechanical reasons and which is constantly filled with pus and necrotic material teeming with bacteria, must be regarded in the light of these findings as a culture-tube with a permeable wall, affording abundant opportunity for the entrance of bacteria and their products."

"The proceedings necessary to discover foci of infection are sometimes simple, often complex, and the search is sometimes exceedingly difficult and trying principally because of the known lack of negative evidence," writes Dr. S. Marx White, in an article on the relation of focal infection to systemic disease, appearing in *The Journal-Lancet* for June, 1915. I quote still further from Doctor White, as follows:

"Foci of infection can be so surrounded by normal tissue or so deeply hidden and symptomless that only a profound conviction as to the existence of some focus, coupled with a most painstaking search, will reveal them. The task is not one which any one individual can perform, as a rule. Trained men in each particular field must take part, but best of men will sometimes fail to uncover a lesion in his particular field, and the case may need repeated study.

I have had more than once to demand repeated examination, in the face of a negative report, when some slight localizing indication gave me a clue. I recall vividly one patient whom I had caused to be examined by some of our best rhinologists four times before a closed focus containing a dram of foul pus was found in the ethmoid cells. The nasal

cavity was of normal appearance, so far as careful inspection revealed, and it was necessary to open the region by probing. This was before the days of successful and routine x-ray examination of the cranial sinuses, and failure does not, or should not, occur so readily nowadays.

#### The Tonsils as Factors in Chronic Disease

I think particular caution is necessary regarding the tonsils. This is not the place to discuss the indications for tonsillectomy, but I have not infrequently felt called upon to insist upon this operation when properly conservative colleagues, specialists in that field, have thought the tonsils themselves did not present sufficient evidence of existing disease.

I believe that we as often will find systemic infection resulting from tonsils which are small, adherent to the pillars and more or less buried out of sight, as we do from the frankly and evidently inflamed ones. In such cases, and where no other foci are to be found, the decision to perform tonsillectomy rests more upon whether there is evidence from some local focus than upon the apparent condition of the tonsil itself. This attitude has frequently brought a reward, the pathologist finding evidence of active infection or the operator finding a small deep abscess in cases where the tonsil, on clinical examination, gave no sign of active inflammation.

The recent activity in looking for and finding abscesses in the jaws affords a new illustration of the method of advance in knowledge by the development of a new technic. Without the radiogram, using small gelatin films, which can be placed in the mouth and thus recording the condition of the teeth and maxillæ, a search for infection would be laborious and incomplete. Even with the x-ray plate great care and experience is necessary for interpretation; and this must be combined with a careful clinical study by the dentist, or else serious errors may arise.

The method of management in most cases of dental infection combined with systemic disease must be determined by the physician and the dentist in cooperation. The efforts always must be to preserve the teeth when certainty of eradicating the infection is not sacrificed thereby.

Success in the discovery and management of focal infections anywhere in the body is founded on cooperation. The internist, the roentgenologist (as contrasted with the radiographer), the rhinolaryngologist, the dentist, the genitourinary surgeon or the

general surgeon and the immunologist may be called, one to help the other. It is to be hoped that they would not all be needed in any one case!

#### Gastrointestinal Infections

One of the most common sources of infection is the gastrointestinal tract. A healthy condition of the bowels, with free elimination, is of the utmost importance in the treatment of all chronic diseases. In his "Manual of Physiology," Stewart writes: "In a body which is neither increasing nor diminishing in weight, the output must exactly balance the income, and all that enters the body must sooner or later, in however changed a form, escape from it again. In the expired air, the urine, the secretions of the skin and the feces, by far the greater part of the waste products is eliminated. Thus, the carbon of the absorbed solids of the food is chiefly given off as carbonic acid by the lungs; the hydrogen, as water, by the kidneys, lungs, and skin, along with the unchanged water of the food; the nitrogen, as urea, by the kidneys. The feces represent chiefly unabsorbed portions of the food. A small and variable contribution is that of the expectorated matter and the secretions of the nasal mucous membrane and lacrimal glands. Still smaller and still more variable is the loss in the form of dead epidermic scales, hairs, and nails. The discharges from the generative organs are to be considered as secretions, with reference to the parent organism, and so is the milk and even the fetus itself, with respect to the mother."

For many years, we have understood the grave importance of malnutrition; but, with the still more serious subject of faulty elimination and excretion we have not been so well acquainted. If the various excretory organs do not carry out their functions properly, life is destroyed much more rapidly than when food is being withheld; and the continuous imperfect elimination is a momentous issue.

The superior importance of the functions of *egestion* over those of *ingestion* was pointed out by Marshall Hall in 1842. When the system fails to rid itself of its own carbonic acid, it is soon poisoned. The excreta eliminated through the urine are powerful nerve poisons, the retention of which gives rise to coma and convulsions; while bile retained in large proportion is equally injurious. In fact, it seems that the assimilation of all foods is attended or followed by



the production of principles of an extraordinarily destructive character, either as injurious products of the food when split up within the digestive tract or as waste matter, the result of hystolysis.

The problems concerned with retrograde metamorphosis are very important, especially those connected with the nitrogenized substances, the components of which do not merely go toward tissue building and then, through a process of oxidation, change from one form of hystolytic product to another; for, they do not break up, in the tissue destruction, into creatin, creatinin, tyrosin or other early-stage products of tissue decay, then change into urea and uric acid, merely. In all these forms, they are, when in large amounts in the system, dangerous poisons; and they also become ferments within the organism, the deleterious functions of which must be taken into consideration by the physician.

#### Acidemia

*Acidemia* is a condition found in many chronic diseases, and it finds expression in various ways, all indicative of imperfect digestive processes, faulty metabolism, and incomplete elimination. This condition is caused primarily, in many instances, by hepatic insufficiency, intestinal stasis, and toxemia. According to Harrower, who, in an article on acidemia and autointoxication, has lucidly described this condition, the first evidence of acidemia is usually a feeling of dulness or laziness, with an occasional headache. The individual complains probably of "not feeling well." He is, of course, not yet sufficiently inconvenienced to consult a physician, and, so, the condition is allowed gradually to become worse. The bowels are always quite irregular in action, at times moving too freely and again being moderately constipated. Later, the breath becomes foul, the tongue, coated, the stools, bad-smelling, often having an offensive, putrid odor, and in many patients dark rings form under the eyes.

The effect upon the temper is often marked, and persons previously kind, affable, and agreeable become morose and show "streaks" of ill-temper and rudeness. The mind is not as clear as before, and the afflicted individual often finds it hard to recall names or dates that were formerly quite familiar. Occasional pains are felt in various parts of the body, usually varying quite a good deal in severity and persistence. These may be ascribed to "a touch of rheumatism" or to

"just a little cold," and are naturally treated in a haphazard manner, but with little or no lasting results.

Things go on from bad to worse until some neuralgia, arthralgia or other acutely painful condition causes the sufferer to demand the physician's attention. Even should the patient be fortunate enough to be subjected to a thorough physical examination, no serious conditions will be brought to light, unless some other disease-process is also present. He receives, as a rule, a more or less brisk cathartic, but otherwise is reassured by the usual "You'll be all right in a day or two."

If, however, the urine should be examined, several important departures from the normal will be discovered. The amount is usually diminished, the total acidity is found to be very high and the total solids low. The acidity shows an increase above the normal of 35 to 40 or even 100 percent. The test for indican rarely fails to establish its presence.

The routine cathartic course given serves, of course, to remove from the bowels large amounts of stagnant, putrefying material, and, at least temporarily, the patient is made to feel "better." However, if the cause of the trouble is allowed to persist, the previous conditions soon return and the patient grows steadily worse. The stomach gets out of order, the appetite fails, and the mouth condition often becomes serious. Teeth decay rapidly, not from lack of care, but from the acid saliva that is invariably present. Neurasthenia, mental irritability, the "blues," insomnia, neuritis, neuralgia, dyspepsia, and a large number of other disease-manifestations are often encountered, and the patient is liable to become sooner or later a nervous wreck. In this condition, he goes from one physician's office to another, without obtaining any permanent benefit. At times, he feels a little better, then, again, he is much worse, until at last he falls an easy victim to some serious disease, such as pneumonia, typhoid fever or tuberculosis.

#### Importance of the Urine Examination

From the foregoing, it is evident that it is advisable in all cases to make a urinary analysis. Leube has well said: "I would advise particularly never to omit the examination of the urine in cases of headache, even if it is of purely intermittent character. We shall thus avoid subsequent self-reproaches."

The laboratory report will give definite grounds for initial rational treatment, while the subsequent urinary examinations will show the effects of the treatment. The saliva, too,

should be tested with blue litmus-paper—a very easy procedure of considerable value, which should be carried out much more frequently in the routine of office or bedside consultations. The administration of laxative salines, suitable hepatic stimulants, and antacid remedies for an extended time—to be governed by the influence upon the urinary and salivary acidity—will in time regulate matters more satisfactorily.

Intestinal antiseptics, such as beta-naphthol, the sulphocarbolates, and other similar substances, are of great assistance in reducing bowel putrefaction. The proteid rations should be materially reduced, especially the more easily putrefying meats.

Most authorities deny that acidemia and autointoxication are diseases in themselves; and this is doubtless true. Both conditions are a serious menace to the individual, in that they lower the general vital resistance, rendering the subject more susceptible to every kind of disease, infectious or otherwise. The danger from these conditions is in direct proportion to their insidious onset. They should always be thought of when patients come complaining of obscure ailments; while they are easily detected if only the physician will give the proper weight to the laboratory findings and makes it a routine practice either to examine the secretions for himself or else have it done for him by some competent laboratory-expert.

#### Digestive Principles

Pepsin, an unorganized ferment excreted by the follicles of the stomach, is a powerful digestant of all proteid substances. Pancreatin, another albumin-digesting ferment, is formed by the pancreas and possesses notable digestive powers. Ptyalin, useful for converting starch into sugar, is a ferment present in saliva. These valuable ferments are excretions, in that they are cast out of a part of the organism, while at the same time they promote digestion by their action on the food-material. An animal-principle closely resembling albumin is contained in all the gastric, pancreatic and salivary fluids; a principle which appears to be in a constant state of change or incipient decomposition; and this very condition, if it be thus, makes the albuminous matter important in promoting solution of aliments, but at the same time renders it unfit for retention in the circulation.

Our body-heat has its source in the lactic acid of the lactate of sodium. This is derived from glycogen stored up in our livers, where

it is converted into sugar, thereafter to be broken up into the lactic acid mentioned; which then, uniting with the sodium of the blood, becomes slowly oxidized. The production of too much waste matter by the overactivity of these ferments is a phenomenon just beginning to attract the serious attention of clinicians, and there is every reason to believe that much good may come from a study of this problem.

Down along the gastrointestinal canal various excrementitious activities take place which result in numerous recrementitious albuminous products, and these are very helpful to food elaboration. Primarily divergent from each other, in themselves they possess considerable action in common. In other words, the primitive tegument along the digestive tract has gone through such changes that it now excretes, or secretes, various products which assist the process of assimilation while it gives out other products which, when the system is charged with them, are too far advanced to have any nutritive force, being, in fact, active poisons.

As is well known, the intestine, in addition to its other functions, eliminates a number of substances from the body-fluids, notably iron, phosphorus, calcium, and others, in the form of organic salts. It also secretes, in less measure, nitrogen and fatty, or fat-like substances.

The doctrine of intestinal autointoxication was promulgated by Bouchard and elaborated by his followers. It is a familiar fact that the intestine is the sole internal organ in which, from the day after birth onward, bacterial decomposition occurs continuously without necessarily injuring the body. Indeed, bacterial action is believed by many to be necessary for the correct functioning of the intestine. The chemical processes in the decomposition of the chyme consist in fermentation of the carbohydrates, putrefaction of the protein, and conversion of the fats into the lower fatty acids. Of all these, the last mentioned is of least importance.

It is in the colon and in the lower part of the small intestine that, normally, *fermentation of carbohydrates occurs*. On the other hand, *putrefaction of protein* takes place only in the large intestine. A rigid line of demarcation is formed by the ileocecal valve, above which putrefaction never sets in, except under pathologic conditions. In the cecum and ascending colon, the two seats of most active decomposition, both putrefaction and fermentation come together; the latter afterward predominates over the former to de-

crease again in the last portion of the colon, where the feces become inspissated. It follows that the fecal bacteria, which flourish abundantly in the cecum, gradually decrease in numbers further down.

The products of fermentation are: gases, volatile fatty acids and lactic acid; and, for the most part, these are absorbed by the intestinal wall. The gases become again excreted with the air expired by the lungs, in breathing. The fatty acids are either expired or eliminated unchanged in the urine or become oxidized. Those products of

fermentation that do not become absorbed are excreted, either as flatus or along with the feces. Putrefaction of protein produces ammonia, sulphureted hydrogen, and other gases; as well as several characteristic bodies, such as aromatic oxy-acids, phenol, indol, skatol. These latter also are absorbed by the intestinal wall, while the gases are expired. The other substances either remain, to a variable extent, in the feces or are excreted in the urine as compounds of sulphuric or glycuronic acid.

*[To be continued.]*

## Bacillus-Coli Cystitis, and Its Successful Treatment

By J. FAVIL BIEHN, M. D., Chicago, Illinois

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THE colon group of microorganisms is responsible for ninety percent of all cases of cystitis. In children, the percentage is even greater than this.

The disease manifests itself in various degrees of severity, the mildest form being practically nothing more than a bacteriuria. In such cases, there is frequent urination, and the urine shows a granular cloudiness, is acid in reaction, and contains very few cells, but a large amount of mucus. Albumin may be absent, or if present there is a slight trace only. Such cases are very frequent. They may last a week or several months and terminate in spontaneous cure or gradually become more and more severe—at least severe enough for the patient to consult a physician.

### Variations of Type

From this mild type, there are all gradations up to the most severe form, in which there is frequent, painful urination, tenesmus, slight fever, many pus cells, usually a few red blood corpuscles, and albumin in the urine. The urine is of acid reaction, although at times this acidity may be very slight. These severe cases usually show an extension of the disease to other portions of the urinary tract—that is, an ascending infection, the ureters and finally the pelvis or the kidney itself becoming infected. Not infrequently one sees cases of the severe type of cystitis beginning as a renal infection. The symptoms are the same whether the disease originates as a cystitis and there is an ascend-

ing infection, or whether infection begins primarily in the kidney itself. As already stated, there are irregularly occurring colicky pains and renal tenderness, while albumin, red blood-corpuscles and pus are found in the urine. There is an accompanying fever of an irregular, intermittent type, resembling very much that of malaria. These cases may develop a septicemia due to the colon bacillus.

### Conditions That Predispose to Colon Cystitis

There is always a predisposing pathologic condition, general or local. More often this is local, that is, located in the urinary tract. Upon investigation we find a history of urinary retention, urethral stricture, enlarged prostate, chronic endometritis. Less frequently there is some insidious systemic disease.

This form of cystitis is very common in women and in practically all cases there can be obtained a definite history of severe chronic constipation. As a matter of fact, the real cause of the infection is believed by many to be found in the natural tendency of the kidneys to separate living bacteria from the blood stream and excrete them by the urine, normally without harm to urinary tract. We know definitely that this occurs, because, in various infections in which bacteria are present in the blood, the bacteria are found in the urine: typhoid bacilli in typhoid-fever; pneumococci in pneumonia; streptococci in rheumatism; and so on. Further, it is believed by some that colon bacilli are constantly passing the intestinal

mucosa, gaining entrance to the blood stream from which they are eliminated by the kidneys, and, as many observers claim, without a demonstrable intestinal lesion. The disease may also result from extension (more frequently, I believe, in women) from a peritonitis or peritoneal inflammation. It was formerly thought that appendicitis and peritonitis were essentially colon-bacillus infections, but that mistaken opinion is now known to have been due to faulty methods of culturing, the colon bacilli overgrowing the streptococci, which are the essential organism in these infections; rarely is the concomitant causative organism a staphylococcus or a pneumococcus.

#### The Distinctive Features of the Colon Bacillus

The colon bacillus appears in the urine usually as a diplobacillus. These organisms are found partly in long threads, but usually are short, like cocci, and in a freshly voided urine are not very motile. The urine is practically always acid, but the simple fact that the urine is acid does not justify one in assuming that the cystitis is due to the bacillus coli; other organisms may be found and it is always essential to make at least a microscopic examination preferably using Gram's stain.

The patient's serum usually will agglutinate the organism in a dilution of 1 to 20 or 1 to 50. In fact, natural agglutinins for bacillus coli are commonly present in normal sera; frequently, however, in slight cases, the patient's serum will not agglutinate the organism in a dilution of 1 to 50.

#### Bacterin Treatment of Chronic Cases

The chronic type of the disease is practically always markedly benefited by bacterins, although occasionally there occurs a case in which one or two injections will rapidly reduce the temperature to normal, all local symptoms disappearing at the same time. However, in my experience, a complete clearing-up of the bacteriuria is impossible by means of bacterins alone, and a few pus corpuscles will be left in the urine.

Nevertheless, in these chronic cases, the bacterin alone produces very marked benefit. I have yet to see a case that, so far as the patient's subjective symptoms were concerned, was not cured clinically.

Relapses are not common. Seven cases of the chronic type in women (one of five years standing), with frequently-occurring exacerbations, especially during the winter months, have now been completely free, symptomati-

cally, from this disease, two years after a course of bacterin treatment, although in two of them a few pus corpuscles, with an irregularly occurring bacteriuria, without clinical symptoms, still persist.

#### Results Obtained in Acute Cases

In acute cases, the results are usually not so striking with bacterin treatment alone. These cases always require the use of some urinary antiseptic, preferably hexamethylenamine, combined with acid sodium phosphate to increase urinary acidity, and careful attention to the general and especially to the gastrointestinal condition. However, if ten or twelve doses of the proper bacterin be given (by this I mean comparatively large doses at four-day intervals), and the desired result is not obtained, then we know the predisposing cause, that is the local or general pathologic condition as a result of which cystitis has occurred, has not been removed, be this a general, genitourinary or gastrointestinal condition. It is essential in these cases to determine the presence or absence of some surgical condition, such as polypi, strictures, and the like.

#### Two Interesting Cases

During the last year, two exceedingly interesting cases of colon-bacillus infection of the bladder have come to my hands:

The first patient was a man, forty-six years of age, operated on in February, suprapubic incision being made for the removal of a vesical calculus. Recovery was uneventful, except for a slight fistula. This fistula, however, persisted in spite of the ordinary treatment for some three months, at which time he was referred to me. Examination revealed a small fistulous opening at about the median point of the incision, from which was passed a few drops of urine, practically only during the time of urination, and rarely more than a half dram at a time. The urine was acid in reaction, contained considerable pus, much mucus, many colon bacilli, very few red blood corpuscles, a slight trace of albumin, a large amount of indican, and no casts.

An autogenous bacterin was prepared from the patient's urine, and administered at four-day intervals, 100,000,000 dead organisms at the first dose, increased 100,000,000 at each successive dose. He was likewise given hexamethylenamine and acid sodium phosphate, 10 grains of each three times a day, and bacillus-bulgaricus bouillon. The fistula closed rapidly, and at

the end of three weeks there was no apparent evidence of the fistulous opening except a very slight reddening of the scar. Some six weeks later, however, there reappeared a small superficial abscess at the site of the fistula. It had no connection, however, with the bladder, and two additional doses of bacterins, 400,000,000 bacteria in each, produced its disappearance.

The second patient was a physician, age 64. He had suffered from a hypertrophied prostate with occasional retention requiring catheterization; constant bacteriuria, finally complete retention. A suprapubic prostatectomy was performed, and for three weeks, following operation, in spite of the usual antiseptic treatment, a violent cystitis was present. This patient was given an autogenous bacterin, 25,000,000 microorganisms, daily for six doses, then 300,000,000 every four days for five doses, at which time the fistula closed. This patient, in order, as he himself stated, "to make doubly sure of a cure," took himself approximately 2,000,000,000 colon bacilli. This produced severe prostration, lasting for some ten or twelve hours; in fact, it was so severe that he was unable to stand, but the following day, as he expressed it, there was no evidence of toxemia or depression. This was the only reaction to the bacterin that he manifested, the previous doses producing only a very slight discomfort.

#### Chronic Cystitis in a Woman

Another interesting case was that of Mrs. S., age 39, who suffered from acute exacerbations of a chronic cystitis and bacteriuria, following slight acute exacerbations of a chronic appendicitis for three years. At no time, until the last attack, did the cystitis persist for more than five days. The patient suffers from chronic constipation and when this becomes particularly marked, she says she has a "bilious attack," in which

there is inhibition of digestion, fermentation of gastric contents, with severe headache, followed by an attack of vomiting, later some diarrhea, and then evidence of cystitis. Usually at the time she complains of diarrhea there is slight pain in the region of the appendix. She refused operation.

A thorough course of catharsis, followed by an autogenous bacterin and bacillus-bulgarius buttermilk, as a sole diet, in twelve days cleared up the condition completely—at least symptomatically. The return to a normal diet, however, resulted in a marked rise of temperature (102.8° F), tenderness in the region of the appendix and six hours later, tenesmus and frequent urination, with but a slight increase in the number of pus corpuscles in the urine.

A return to the buttermilk diet and four additional doses of bacterin, followed by a gradual return to normal diet, in one month has produced a clinical cure, without relapse, although there is still an intermittent bacteriuria.

An examination of this patient's urine, from which the bacterin was made, showed a large number of pus corpuscles, and many colon bacilli, mostly small diplococcus-like forms that proved to be bacillus coli communior. An examination of the urine immediately following the relapse showed very few corpuscles and many clumps of bacilli, swollen and agglutinated, giving an appearance such as one sees under the microscope in a positive Widal reaction. These clumps of bacilli could be seen with the naked eye, and they did not tend to break up, although the urine was observed for forty-eight hours at room temperature. This patient's serum now, some nine months after bacterin treatment, agglutinates this particular strain of bacillus coli communior in a dilution of 1:1200.

[To be continued]

**W**HOWER could make two ears of corn or two blades of grass to grow upon a spot where only one grew before, would deserve better of mankind than the whole race of politicians put together.—Jonathan Swift.



# Corporation Surgery

How the "Company Doctor" Handles Emergency Work

By SAMUEL C. BEACH, M. D., Chicago, Illinois

## III. RAILWAY SURGERY

**I**N VIEW of the large number of accidents occurring on railways, both to employees and passengers, the position of the surgeon to the railway-corporation becomes one of great importance, and, in proportion, the means devised for the ready care of this class of injuries have, of late years, necessarily improved. The great advances in surgery have been utilized to the utmost advantage in the treatment of railway emergency-cases, and methods in vogue but a short time ago are being improved and practicalized year after year, until today, through organization and first-aid lectures to employees, the United States has a system of railway surgery that it may well be proud of, as evidenced by that very practical proof—decreased mortality.

### The Past and the Present

From the beginning, in earlier days, it has been realized that the treatment of these cases has been hampered by lack of facilities, wrecks apparently choosing to occur always at a point situated the farthest away from any possible aid of a professional nature and thus necessitating long delays before the surgeon could be conveyed to the victims. Then, when the surgeon had arrived, there would be little or nothing to work with, his dressing-materials being limited to a few bandages, a small quantity of gauze, and such instruments as had been hastily snatched up on leaving the office.

The organization of the road was not then what it is now; the equipment was vastly inferior, there was no track elevation, the road-bed was poor, which, with curves and reverse curves, made wrecks more frequent, while the class of trainmen then existing were not as well trained and skilful as they are at the present day. Moreover, the country was not as thickly settled as now and stations were farther apart, making difficult the problem of securing immediate first aid, one of the fortunate uninjured oftentimes being the only means of sending out for help, and then frequently only by the tedious process of a long walk back to the nearest station.

However, "necessity is the mother of invention," and it did not take the officials long to realize that this problem must be

solved, and, applying their active brain-power to its solution, we have now a splendid system in the hands of a trained and well-equipped force, which is carrying out the details of the work in such a manner as materially to reduce the mortality of railway casualties by an appreciable amount.

### Fewer Casualties Among Employees—More Among Trespassers

It is gratifying to find that the percentage of deaths and injuries among those employed on the road has been reduced by something over 50 percent, the greater number of accidents happening to a particular class of which more will be written later. Although the number of casualties among the employees has been decreased, the total number of accidents for the year has actually been increased; which statement sounds mystifying, until it is explained that by far the greater number of unfortunates are to be found among a class of careless, unthinking people known as trespassers, whose existence is the bane of the careful railwayman, who already has enough to attend to in the discharge of his official duties to his road and, yet, is called upon to watch the track constantly for men, women, and children who make it a public highway or even a playground.

Much money, the combined planning of master minds in railroad affairs, as well as countless devices for warning the general public against trespassing, has been wasted in an almost fruitless attempt to keep people off the right of way; but, until legislative measures are passed, providing for fines and penalties for this class of offenders, the hoped-for results can never be attained. Even where such laws have been made, they are seldom enforced; so, year after year, the evil continues. The only encouraging fact to be mentioned is, that at least a start has been made to abolish this trouble, which should, by all means, be wiped out.

A glance at the statistics of railway accidents may prove interesting as well as instructive, and so will be inserted here: In the year 1914, out of 265 passengers killed, only 85 were killed in train wrecks; leaving a remaining 180 who lost their lives falling from trains in yards, getting on or off cars

in motion and being struck by passing trains. Among employees, it has been found that only one man out of every 172 was killed—certainly an enlightening statement and showing the care which is being exercised by officials. As significant as are these facts, the deduction can be made still more plain. During the same period of time, 5471 persons were killed and 6354 were injured while *trespassing* on the right of way. Think of it, 32 men, women, and children killed or injured *every day* while they were trespassing on property which is fenced off, placarded by day and danger-lighted by night, watched and guarded by every conceivable plan just for the purpose of preventing this very danger.

Yes, you are right, the preponderance of the blame lies with the public; and here is where you and I, humble private practitioners though we be, can do much good by warning our patients and our patients' children of the danger incurred by trespassing on railway property; nay, more, by setting them a good example.

#### First Aid to the Wreck Victims

The plans adopted by different roads differ somewhat, and it might not be amiss to explain briefly what these differences are, though the results are all productive of the same excellent effect in decreasing mortality and likewise, by competitive stimulation, in increasing efficiency.

The formation of a surgical staff for a railway system should start with the appointment of a chief surgeon, whose duties not only would be professional, but executive as well. He has the complete supervision of the surgical work of the entire road and is in authority over the division surgeons, who are stationed at each division point, having charge of from 200 to 400 miles of territory each. These division surgeons are appointed by the chief surgeon from men of proven ability in their community and are usually recompensed in such a manner as to enable them to devote their entire time to the work in hand, only seeing private patients in their offices and not making any outside calls. Many roads require physical examination of their employees, also a record of time off for sickness, as well as accident; and the discharge of all these duties will usually occupy the surgeon's entire time.

When the particular division is in a thinly settled section of country, it is customary for the division surgeon to go to the scene of the accident and bring the injured person or persons to the nearest point where proper

care and attention can be given. Should the division be in a well-settled part of the country, it is often possible to have some local surgeon (with whom such an arrangement has been previously made) care for the case until the division surgeon arrives, whereupon the patient is immediately placed under the latter's care.

The nearness of a properly equipped hospital will often affect the above arrangement, and the general subject of railway-hospitals will be discussed later in the paper; the various roads differing somewhat in their views on this subject.

#### Taking Care of Wreck Victims

When a wreck occurs—and it would seem that it usually happens at some point midway between stations—the nearest division surgeon is called out and hurried to the scene on the relief-train; which latter consists of the giant wrecking crane, block cars, one or two sleepers or day-coaches, a full line of surgical supplies, besides such additional surgeons as the division surgeon may deem necessary to call upon, according to the circumstances.

Immediately upon arriving, a headquarters for the accommodation of the injured persons is selected, and this may be a nearby house or shed, an empty coach (sleeper preferred, though a day-coach may be made to do by turning back alternate seat-backs and placing the cushions longitudinally), or, finally, if none of these are available, the floor of a box-car on which hay or straw covered with blankets has been laid.

The helping surgeons are paired off as first-aid men and instructed to receive and give immediate surgical care to the injured, *as they are taken from the wreck*; also instructing the stretcher-bearers where to carry their burdens. The dead are conveyed to some separate point close at hand and, covered with blankets, placed under one man guard. The workers, provided with proper tools, lift the wreckage just high enough to release the body of any victim, who is then drawn carefully out. The first-aid surgeons are close at hand to receive the patient, examine the general condition and ascertain the extent and severity of the wounds; stimulants are given and the wounds receive first-aid dressing. Especial care and attention is paid always to hemorrhage control, using for this purpose either the elastic constrictor, although better, if the bleeding points can be readily found, the artery-forceps. Sterile dressings are then placed in immediate con-

tact with the injured surface, bandages are applied, and the patient is placed upon the stretcher or substitute therefor; the bearers are then instructed where to carry their burden.

It is wonderful how many victims can be cared for in this systematic manner, and with safe speed, too. It will be seen that this plan provides aid as quickly as the victim is released from the wreckage.

The patient is then carried to the division-surgeon's headquarters, where further surgical care, of a more definite and thorough nature, is given; the whole amount of time consumed being only as long as it takes the first-aid dressing to be applied and the patient's being carried to the headquarter location.

The condition is now carefully examined and any emergency-operation determined upon is done. The patient then is placed under the care of the nurse, *in the car* which it is designed will carry the patient to the nearest hospital; the object being to move the injured person as few times as possible.

#### The Immediate Surgical Care

No operative measures, except such as are imperative and necessary, should be performed at this time, and first-aid surgeons working on the victims as they are removed from the wreckage should be instructed to limit their efforts to covering the wound with simple sterile gauze pads and bandaging firmly in place—this, of course, after stopping hemorrhage.

The point brought out in having the forceps applied for hemorrhage control at this time has been criticized, but no risks should be taken in this matter; and it is certainly more sure to apply the forceps, especially where the bleeding vessel is visible or easily found, than hastily and imperfectly applying a constrictor and having the patient continue slowly to bleed to death. It is not absolutely necessary to tie off the bleeding point, as the forceps can be so applied as afterward to be included in the bandage, thus becoming a landmark for the division surgeon later on, indicating to him his first duty in caring for that particular case.

The injured having been cared for, they are then conveyed to the nearest hospital, there to undergo removal of any unclean and damaged clothing that has not already been removed, their wounds to be redressed if the bandages have become contaminated with blood, and such further operative measures instituted as have been found im-

possible to perform previously. This latter would mean the completion of an amputation for which the snipping off of a nearly severed limb had been done to facilitate transportation, operating for compound depressed fracture of the skull, and other operations of that nature. It should be borne in mind, however, that a compound fracture of a leg or arm, wherever there is the least chance of saving the member, should be carefully cleaned and disinfected at the wreck, making the temporary part of the dressing only the retaining apparatus.

Dislocations may be reduced under an anesthetic, or even without, at the place of accident; simple fractures temporarily splinted; burns given complete dressing, except where cinders and dirt are ground into the wound; suturing for the control of hemorrhage—all these may be done at the wreck; but the surgeon should remember that no time must be wasted, and should delay his *critical* and time-taking operative measures until his patients are in the hospital and all proper facilities are at hand.

#### Some Forms of Injury

Railway accidents are productive of high mortality, for several reasons. First, the shape of the car-wheel with its projecting flange, this always producing a particularly mutilating form of injury; then the weight of the car superimposed upon the flanged wheel and pressing upon a steel rail; further, the speed of the train, this exerting a terrific force when coming in contact with a train going in the opposite direction; finally, the shock produced by the concomitant horrors of a wreck and the delay in receiving first aid—all these are factors to be taken into consideration.

It is now the plan, carried out by most roads, to instruct their employees in the use of the first-aid outfits carried on each train, and a gratifying decrease in mortality is noticeable as a direct result of this course of instruction. Where formerly the surgeon found wounds covered with dirty dressings, old handkerchiefs, tobacco, and such things, he now finds at least a pad of sterile gauze in contact with the injured part—thus the first and earliest step in the prevention of after-contamination has been attended to.

Two noteworthy peculiarities of railway injuries are the extensive and serious subcutaneous lacerations produced by being caught between the bumpers of the cars; the odd and characteristic feature being that, while the skin is not broken, the muscular

tissue underlying it is extensively torn or crushed. The other is the wholesale stripping or tearing of the skin from the underlying muscular structures, produced by the pinching or constricting lateral force exerted by the wheel pushing the limb along the rail without actually running over it, or by pushing the limb off the rail and pinching a long fold of skin between the flange and the track while the limb lies closely parallel to the rail. These two types of injury should always be dressed without any attempt at suturing, at least for a few days, or until the "limit of virulence" has declared itself.

This open method of treatment is also effective in all injuries where, through any accident contamination, there is any suspicion of infection by the tetanus-bacillus, it being of the anaerobic type and prone to development only when kept away from light and air. The injection of the tetanus-antitoxin, 1500 units, should also be made. First aid of an amateur nature will sometimes use horse-blankets for covering the patient, and these cases should always be thoroughly and carefully cleaned, the wound treated by the open method, and tetanus-antitoxin given.

The first-aid care of hemorrhage is of the utmost importance in railway-cases, and the outfit always contains an elastic constrictor. It is better to apply this as close to the wound as possible and yet feel safe that it will not slip or become displaced; for, any constrictor, where it remains on for any length of time, will produce more or less devitalization of the tissue underneath, while oftentimes the wound is of such a nature that the surgeon must save every inch of skin possible—and any tissue lost from constrictor devitalization becomes a serious affair. It is better to apply the tissue-forceps to the bleeding-vessel wherever practicable and tie off at once, thus avoiding any risk.

If the hemorrhage be from a scalp wound or any place on the trunk, cleaning out the clots and packing the wound with gauze, then applying a firm bandage will usually be sufficient until the case can be permanently cared for.

#### First Aid in Fractures

In the immobilization of fractures, use any *well-protected*—that is, padded splint or substitute for the same (any board, cane, umbrella). If none such is at hand, tie the injured leg to its fellow, while an injured arm may be bandaged closely to the body.

In cases of compound fracture, take enough time to disinfect thoroughly and carefully,

no matter what other cases have to wait, for the first dressing in these injuries tells the story for the future, so one should be sure that at this first dressing everything possible is done to make the story have a happy ending. Here is where tincture of iodine will do wonders. Use it freely.

When your patient is brought in for permanent dressing, look *first* of all at his general status, and see whether he is in good physical condition, before you even look at the wounds—the people have a deep-rooted prejudice against surgeons whose patients die. Also, the public has a right to be thus prejudiced, and it is only by care and attention to the vital processes and the assurance that they are rightly carried on that the surgeon can help to overcome this feeling.

#### Hospital Railway Cars

The question of a car fitted especially for the handling of railway-accident cases has been given careful consideration at various times and by various roads, and, while the plan has its advocates and opponents, it has not been universally adopted in this country, neither has it been universally condemned. The cost of preparing such a car would be considerable, probably being from \$15,000 to \$18,000, and when finished and ready for use it would be available possibly on but two divisions of the road, covering a territory of maybe 300 to 400 miles. Thus, to provide for the care of the entire system, would mean building and equipping 20 or 30 of these cars, depending on the size of the road; and this would be exclusive of maintenance and expense of moving. For these reasons, as well as the fact that, when time and speed are the great factors (and it has been estimated no time and speed could be saved by the use of hospital cars), they have not been installed on many roads in the United States.

There are points well worth considering, however, in the fitting up of a car for first aid and to become part of the equipment of the wrecking-train. Such a car could be made from a converted day-coach from which the seats had been removed and an emergency operating-room fitted up in one end by partitioning off about ten feet of space. The remaining space could be utilized as a general ward and its floor-space covered with cots for the reception of injured persons. Ten feet could be partitioned off from the other end of the car for a store-room for surgical supplies, nurse-room, and drugs.

Such a car would not entail a great initial expense, could be used for the surgeon's

office and examining-room for employees, and would at all times be ready to be taken out with the relief-train on short notice. It would serve admirably for the care of accidents happening in the yards, and, in case of a serious accident which required transportation of an injured person to a distant point, could be coupled to the regular train and the case cared for and watched during transit to the better advantage of all concerned. Cases of contagious disease requiring transportation over the division could well be placed in such a car, which could afterward be rendered sterile by thorough fumigation, thus protecting the regular passengers of the road from the danger of infection. The fact that hospital-cars were in use in Germany and Belgium, even before the present war made it necessary, would seem to point to their value and possibly serve to incite us of America to adopt them.

#### Railway Hospitals

Whether the railway shall own and control its own hospitals depends largely upon the individual past experiences of the chief surgeon, and the road should accept his indicated policy either way. It has been found of the utmost value, however, to have railway-owned and -controlled hospitals, and for many reasons, the chief of which is, that the chief surgeon and the division surgeon under him could have direct supervision of a patient *until complete recovery*—an important factor not only from a physical, but from a legal standpoint as well. It is not to the advantage of the patient to pass from the hands of one surgeon to another, even when they are

equally competent, for experience has proved that the man who has dressed the case first or supervised the dressing should continue in the care of such case until recovery. The first dressing is all-important, and no surgeon likes to wash another's "dirty dishes."

The hospital should be located at the division-point or midway in a division, so as to cover the largest amount of territory and be the more readily accessible. It need not contain more than twelve or fifteen beds. Then, when the patient is very seriously injured, the fact of the hospital being within easy distance will be appreciated by reason of lessened distance for transportation and lessened mortality rate. It is not at all necessary to maintain a larger, or base, hospital, if the chief surgeon uses care in the appointment and selection of his division surgeons—a good man can do more with fewer conveniences than one less skilled with the most complete equipment.

Patients should be kept at the hospital, when possible, until complete recovery has taken place; for, convalescence is always retarded when the patient is allowed to go home—the hospital regime is the best atmosphere for railroad and other industrial cases, not only for physical, but for psychic reasons as well.

It is sometimes found a valuable aid to recovery to establish a convalescent-home adjacent to the hospital, where those patients able to exercise in the open air can be placed for a week or two previous to discharge; the division surgeon thus maintains personal supervision during the entire care of the case—an important factor.

## Adventures of a Frontier Doctor

### III. A Ride for Life

By CHARLES STUART MOODY, M. D., Hope, Idaho

ABOUT once every six months I forsake my lair in the mountains of Idaho and descend upon a considerable city that lies about a hundred miles to the westward, there to take in the bright lights, renew my allegiance to the God of Healing, and, incidentally, foregather with a pair of professional brethren who are especial "tillicums." In addition to showing me how they do surgery, one or the other of these always takes pity upon my benighted and heathenish condition and invites me for a ride in his high-powered

automobile. Once inside, I recline upon the yielding upholstery of the car and mine ear is made glad by the purr of the powerful machinery, the while the proud owner descants upon the hill-climbing capabilities of his "wonderful" machine. And then I discover that, though the machines are of different make, each of my good friends has the very one best on the market.

I confess, I get a great deal of pleasure out of these rides, all at no cost to myself, what-



ever. In fact, I think, sometimes, that I have rather the best of the bargain—I get the ride, while my friend bears all the expense. As we glide over the smooth pavement, I sometimes half wish that my own professional lines had been in more urban places, where I, too, might own such a car. Then, however, I pause and call to mind a ride I once made on Black Prince, when a life was at stake; and there comes a realization of the limitations of even the most powerful autocar, whereupon my faith in a good, stout riding-horse revives and is made but stronger.

#### Black Prince

Let me tell you about Black Prince. He wasn't much of a horse to look at—never would have taken a prize at a horse beauty-show, nor was his gait anything to go into rhapsodies over. He was just a long, lanky, scrub horse, half American and half Indian cayuse, black as a coal, save for four white feet and an ugly white blotch (an inheritance from his Indian ancestry) that extended halfway down his long homely face. He had a temper like a mother-in-law, but his stamina was one that would shame a mountain-goat. I bought him from an Indian one day early in the spring, when the poor fellow had not had a decent meal for months and was nothing but a heap of not too animated bones. I didn't ask the Indian where he got the horse; in the first place, I didn't care one way or the other, and, in the next, the redskin would have lied about it anyway. Then, having no immediate use for the horse, I turned him into the pasture with the admonition to go and fill himself up, so that he would not bring upon his master the blush of shame should I ride him.

After two months in the meadow bottom, Black Prince, as I had named him, grew round and sleek, and—mighty mean. The first time I attempted to mount him, there was what we of the West, in our expressive vernacular, speak of as a "circus." As the "circus" went on, that black devil did some tall and lofty bucking, but I succeeded in staying with him and on him, just long enough to enable me to select a reasonably soft place to light upon—then I struck *terra firma*. It took a full month of unwavering patience and kindness to bring his horsemanship back into anything like reasonable docility.

I had owned Black Prince longer than two years and he had carried me over many hundred miles of our rough mountain-trails, when I had occasion to put him to the supreme test. That test he stood nobly,

but after that he was but a wreck of his former self. So, I pensioned him off, and he spent the last years of his life on an upland meadow, being cared for in that manner that we humans think is best suited to animals of his kind.

#### How the Accident Occured

The thing came about in this wise:

A party of wealthy easterners—consisting of father, mother, grown daughter, and two sons, aged 12 and 14, respectively—were making an extended camping trip through the Bitter Root Mountains; their packing trip to start at the eastern slope of the mountains and terminating at Lewiston, Idaho, on the western border. They were under the guidance of my friend Lew Roberts, who had met them with the pack-train at Stevensville, Montana, early in July. At the time of which I speak, the party was encamped at Jerry Johnson's Hot Springs, on the Lochsa fork of the Clearwater River. There is a thermal spring at this place which is reputed to possess certain medicinal properties and is quite a favorite camping-place, and this party contemplated remaining there for several weeks. Jerry Johnson's cabin is (or was) the only human habitation within hundreds of miles—the only house in a large intermountain region greater in extent than the state of Vermont. It was an ideal place to make a camp. A broad grass-covered meadow stretches out in front of the cabin, behind tower the cloud-capped summits of the Bitter Roots, below flows the crystal-clear river that teems with great trout, the hills are replete with game, and acres upon acres of luscious berries grow on the foothills in their season.

#### A Hurry Call Into the Mountains

It was late in July and I was sitting in my office, half-dozing over a magazine, when a horseman came dashing up, his mount covered with foam. It was my friend Roberts. He reeled into my office half-dead from fatigue.

"For God's sake, Doctor," he exclaimed, "get your horse and beat it to the Lochsa, one of the boys has been shot."

"Where? How?" I questioned.

"He's shot in the stomach. I don't know how it happened. I had been out picketing the horses, when they told me, and I saddled Ranger and came. The boy was alive when I left, that is all I can tell you."

"Where are they?"

"At Jerry Johnson's cabin."

I had not been idle while I was questioning Roberts, but was busy throwing things into an emergency-case.

In fifteen minutes from the time Roberts rode up to my door, I was mounted on Black Prince headed for the Lochsa.

Now, I wish you would get a good map of Idaho and locate the town of Orofino on the Clearwater, then follow eastward until you find Jerry Johnson's Warm Springs on the Lochsa. It is sixty miles as the crow flies, but more than twice that distance as the trail runs. One hundred and thirty miles of mountain fastness untraversed by any road; nothing but a dim mountain-trail traveled by the Indians and the few whites who dare to penetrate the country in search of game or gold. It is a region overgrown with gigantic firs and pines and cut by immense ravines through which torrents pour, and the bald ridges capped by towering cliffs of dark basaltic rocks reaching up to the very clouds.

#### I Start on the Long Ride

It was two o'clock in the afternoon when I started. Sunset found me at Hartmann's on the Musselshell River, the last white habitation that I should encounter. Here I halted for a few minutes, drank a glass of milk and allowed Black Prince to breathe. As the shadows of night drew on, I mounted and set out once more. Fortunately I knew every foot of the trail, night or day, and darkness was no bar to my wild ride. Black Prince took the trail across the Musselshell meadows at a swinging lope and breasted the mountain on the opposite side at his long swinging trot.

All night the noble horse kept up his gait and daybreak saw me at the Indian Post Office, the highest point on the trail. As the sun rose, I looked down far below upon the winding Lochsa, a mere thread of silver in the dark-green of the conifers, miles and miles away. Do not imagine that because I could almost see the tents of the encampment I was near to my destination. You do not know western trails. Many weary miles yet lay between me and my patient, and Black Prince was beginning to grow weary; his sides were heaving, his head hung down, his ears no longer pointed keenly forward, but sagged from fatigue. Yet, the brave fellow kept doggedly on, with the same ceaseless swinging trot. The descending trail wound down the steep mountainside, in and out among the boulders, turning and twisting upon itself like the folds of some

gigantic serpent. It was past midday when I reached the Lochsa and forded that stream. Only six miles more. But those six miles were the longest of the entire journey. I did not dare to urge the animal, which was now reeling as it walked.

And now I kept asking myself, what shall I find when I reach the camp. You well know the lack of accuracy of a layman with regard to anatomical locations. Roberts had said that the boy had been shot in the stomach. I was experienced enough to know that this description was rather indefinite. The wound might be anywhere from the symphysis to the ensiform cartilage and still be within the confines of the "stomach" as understood by Roberts.

#### I Reach the Camp at Last

At length the white tents gleamed through the dark foliage of the pines, and as I rode into camp I was dead-tired and sore from the long sojourn in the saddle. As I rode up, the father met me.

"Is he still alive?" I asked.

"Yes, doctor, thank God."

Entering the tent where the wounded boy lay, though weary and exhausted, I made a hasty examination, for I felt that there was no time to be lost. The little fellow was quite cheerful and smiled up at me as I knelt beside his couch. I found his temperature normal, circulation and respiration good, a little tenderness over the entire abdomen, and ascertained that it was a penetrating wound, on a level with and just to the left of the umbilicus. I then elicited the following peculiar history. The two boys had bored a hole in a small spruce-tree, with a bit, about three feet up, and into the hole they had then inserted a loaded rifle-cartridge. Using this cartridge for a target, they began firing at it with a small-calibred rifle. After several shots the younger one made a center shot, this exploded the cartridge in the tree, when the shell blowing out, struck the youthful marksman in the abdomen, where it buried itself.

Improvising a sterilizer out of a five-gallon oil-can, I soon had instruments, towels, and dressings cooking over an open fire. After scouring the cooking-vessels with sand and soap, I felt safe in boiling water in them. I found the young lady of the family a very intelligent and cool-headed young woman, and, so, pressed her into service as assistant. In an hour everything was ready and the young fellow anxious to take the anesthetic, "to see how it felt." In a few minutes he

was in the land of dreams. I proceeded to bare the abdomen, scrubbed this as well as possible, made a 2-inch incision, and located the empty cartridge-shell and removed it with a pair of hemostats. A large quantity of pus followed. I then washed out the pus-sac, gathered up the shreds of shirt that had been driven into the cavity along with the cartridge-shell, and found that nature had effectually walled off the cavity and that the pocket of pus was all that had resulted

from the accident. I packed the pus cavity with iodoform-gauze, than asked for something to eat.

Leaving the older sister to watch at the bedside, I fell asleep and knew no more until the following day. The youngster was lustily yelling for something to eat, and in a few days he was all right again.

Incidentally, the check which the father sent me in due time was the largest fee I ever received for my services.

## Vaccine and Serum Therapy in Everyday Practice

### II. Theory and Rationale of Vaccine Therapy (Continued)

By W. C. WOLVERTON, M. D., Linton, North Dakota

#### The Opsonic Index

IN THE early days of bacterin-therapy, every writer on the subject laid great stress upon the supposed necessity of determining the opsonic index, both before and after the administration of each dose of the bacterin. A vast amount has been written about the opsonic index, nevertheless—although we now know that the value as a guide to correct dosage and interval between doses was greatly overrated—an explanation of what is meant by the “opsonic index” may not be out of place at this juncture.

Leukocytes (“white” blood-corpuscles) are separated from freshly drawn blood by means of centrifugation, and these are repeatedly washed, in order to free them from serum. Next they are mixed with measured quantities of the patient’s blood-serum and a fresh living culture of the variety of pathogenic bacteria known to be, or suspected of being, the infective agent responsible for the patient’s ailment. This mixture is sealed in a small glass tube and incubated for fifteen minutes at 37° C. The closed ends of the tubes are now broken and microscope-slides are “spread” or “smeared” with some of the contents of the tube. The “spread” preparation is stained with suitable aniline-dyes and examined under the high power of the microscope. At the same time that the opsonic estimation is being made with the patient’s serum, another is made, like it in every particular, except that the blood-serum used is taken from a “normal” individual, or, better, the “pooled” serum obtained from a number of supposedly “normal” indi-

viduals. The term “normal” is used advisedly, for the obvious reason that we have all, at various times in our experience, been infected with many varieties of bacteria. However, to obtain the “pooled” serum, it is taken from persons who have not for some time past suffered nor at the time are suffering from the particular variety of infection which the patient is presumed to have. The mixture containing the pooled serum is used for “control” tests and as a standard for comparison.

Upon examination of the spreads under the high power of the microscope, it is seen that the leukocytes, or at least the polymorphonuclear variety of leukocytes, have, during the incubating process, ingested a variable number of bacteria. An accurate count if made of the number of bacteria contained in each of a large number of leukocytes, and an average is struck. This determination of the average number of bacteria in each leukocyte is made in the case of the mixture containing the patient’s serum, and also in that containing the pooled serum. As a basis upon which to estimate the opsonic index of the patient, the index of the “normal” persons from which the “pooled” serum was obtained is taken as 1.0.

Now, assuming that the average number of bacteria ingested by the leukocytes incubated with the pooled serum is 12, and that each leukocyte incubated with the patient’s serum took up, on the average, only 9 bacteria, then the patient’s opsonic index would be 9-12, or 0.75. If, however, the average number of bacteria ingested by the leuko-

cytes incubated with the patient's serum proved to be 18, then the patient's opsonic index would be 18-12, or 1.50.

Now, from inspection of the foregoing, it can readily be surmised that a determination of the opsonic index requires a great deal of time, the strictest attention to technic, and considerable apparatus; and even in the hands of experts in laboratory-work the results gave such wide variations as to make the opsonic index a very questionable guide upon which to base dosage, interval, and other factors. Most happily, however, it was soon discovered that the clinical symptoms alone furnished a very reliable guide; in many cases, indeed, much more so than did the cumbersome opsonic-index determination. So, the *first bugaboo* of bacterin-therapy was disposed of.

#### Varying Manifestations of the Opsonic Index

Before leaving the subject of the opsonic index, it would be well to say a few words as to its behavior in health and in infections. Take the case of a patient having furunculosis.

While the infection has the upper hand in the fight, showing a condition of lessened resistance of the patient's tissues, the opsonic index will be found to be pretty constantly below normal, say, from 0.4 or 0.5 up to 0.7 or 0.8. This falling of the opsonic index below normal is known as the "negative phase," of which we shall speak more fully a little later. When, subsequently, the immunizing mechanism of the body gains the mastery of the invading bacteria, it will be found that the opsonic index is rising, until it reaches or exceeds the normal index as represented by 1.0.

When a proper-sized dose of a bacterin is administered—assuming the opsonic index to be normal or below normal—there at first ensues a brief negative phase; in other words, the index falls for a period lasting from a few hours to several days. Following this negative phase, the index rises to a point considerably higher than the original level. This second phenomenon is known as the positive phase, and this lasts a variable length of time, usually several days; then it tends to return to or below normal, this fall being coincident to a using-up of the antibodies or immune-substances formed in response to the injection of the bacterin.

It must be remembered that the time for a second dose, and succeeding ones, of a bacterin is before the positive phase has

entirely worn off. By observing this rule, a "cumulation," or a piling-up of one positive phase upon another, may be obtained. On the other hand, after the administration of a suitable dose of a bacterin, a second dose must not be given while the negative phase is on, nor before the positive phase has supervened; for, if this admonition be disregarded, an exaggerated and prolonged negative phase may be produced, to the decided detriment of the patient.

Hence, until one becomes experienced in the use of the bacterins, it is well to administer only a small dose at first: then, at the end of twenty-four or forty-eight hours, if there is no well-marked positive phase and at the same time no noticeable negative phase, the dose should be repeated, in somewhat increased sizes.

The *negative phase* was the second bugaboo which deterred the general run of medical practitioners from employing the bacterins. The danger of an excessive negative phase was dwelt upon at about the same time that the necessity of frequent determinations of the opsonic index was being insisted upon. Now, however, when the bacterins have been in steadily increasing use for over fifteen years, the dosage has been pretty well worked out.

The bacterin containers, as they come from the laboratories, usually have the maximum and minimum dosage printed on the label, along with the number of millions of killed bacteria per cubic centimeter. Consequently there is now very little chance of producing a harmful negative phase as the result of an overdose of a bacterin. If bacterins are administered in anything resembling reasonable dosage, no harm will result.

To illustrate this point, I quote Dr. Timothy Leary, of Boston: "In general infections, vaccines [bacterins.—W. C. W.] are harmless. This was indicated in a case in which, through error, 10 Cc. of staphylococcus aureus vaccine containing 10,000,000,000 organisms was injected, at one time, as an initial dose. No harm resulted. In a second case, the same dose produced temporarily a collapse, with prompt response to heat and stimulation." One can easily imagine what would be the outcome if such a mistake were made in the size of a dose of a gelenical preparation of aconite, digitalis, belladonna or any other of the powerful vegetable drugs or their active principles. I can truthfully say that, after an almost daily use of the bacterins during the past five years I have never seen a harm-

ul negative phase produced by a dose of a bacterin

And, so, the second bogeyman is disposed of. The dosage of bacterins is no harder to master than is that of drugs; in fact, it is easier, for, the dosage of the bacterins is nearly always printed on the container.

#### The Preparation of Bacterins

The first step in the preparation of a bacterin is, to procure the infecting organism or organisms in pure culture—that is, unmixed with other varieties of bacteria. This is work for an expert bacteriologist, hence, we will not enter into details as to how this is accomplished.

In the case of an "autogenous" bacterin, the causative germs are obtained from the lesions of the patient himself. In the preparation of "stock" bacterins, the pathogenic bacteria of a given variety are obtained from a number of different sources, the resulting bacterin being "polyvalent," that is, it contains several (usually about a dozen) *different strains of the same variety* of bacteria. The "autogenous" bacterin contains but a single strain, the same as that which is responsible for the patient's disease.

Slant tubes of solid culture-media are inoculated with the microorganism from which the bacterin is to be prepared and are then incubated, usually for twenty-four hours. The growth is then washed off with sterile physiologic salt solution and the emulsion well shaken, so as to break up any masses of bacteria. A definite quantity of the emulsion of bacteria and saline solution is now examined under the microscope and

the number of bacteria to each cubic centimeter is estimated.

This counting is done in various ways, usually either by direct count, using the common erythrocyte counting-apparatus, or after the method of Wright. In this latter method, equal quantities of freshly drawn blood, bacterial emulsion, and sterile salt solution are thoroughly mixed together. A spread preparation of the mixture is then made upon a microscope-slide, dried, fixed, and stained. The number of bacteria and the number of red corpuscles in a given field are then counted; several fields being counted and an average obtained both for the bacteria and the corpuscles. The number of red corpuscles in a cubic millimeter of blood being known, it is a simple problem in proportion to determine the number of bacteria in a like quantity of the bacterial emulsion.

Next, the emulsion of living germs is diluted so that each cubic centimeter of the bacterial emulsion will contain the required number of millions of bacteria. The bacteria are now killed by heating the liquid at a temperature of about 55° to 60° C. for a half hour or so. The degree of heat necessary to kill the bacteria varies considerably, according to the species of microorganism involved.

Culture-tubes are inoculated with the bacterin, to make certain that the latter is indeed sterile. If no growth results in the culture tubes, a small percentage (usually 0.5 percent) of phenol or of trikresol is added to the bacterin, in order to prevent contamination from without the container. The bacterin now is ready for use.

[To be continued.]

## American Medicine for American Physicians

By FINLEY ELLINGWOOD, M. D., Chicago, Illinois

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INTERESTED, as I have been, for forty years, in a study of the materia medica, in an effort to determine the exact medicinal properties of individual drugs, with especial reference to their reliable and, if possible, invariable action upon exact conditions of disease, it is not at all surprising that the entire field of investigation has separated itself into distinct classes. The grouping of remedies with reference to their mineral or chemical characters, to their vegetable origin, to their synthetic production, is a grouping that suggested itself, but these dis-

tinctions have not been studied as carefully as they should be with reference to any rational influence that they may exercise upon the human body in disease.

My studies have naturally caused me to discriminate against remedies that are not, in any of their influences or in the physical properties or chemical constituents, an essential part of the human system. This I cannot here enlarge upon, but it is an important discrimination. That class of remedies which act upon the system in disease in much the same manner as do nature's foods in health



have gradually, after long years, appealed to me as the most rational of all remedies.

As I have studied this rational line, I am more and more convinced, because of their essential, stable, and permanent character, that no class of remedies will ever replace, in their specific adaptation to the common phases of disease, the vegetable remedies. I am confident that they are of very first importance, as they were considered in all past time, except in the last three or four decades, when all attention has been centered upon surgery, while the colleges nearly ceased to teach medicine.

I am not, by any means, a botanist and have never been classed as a botanical physician. I have made myself as conversant with the remedies of one class as I have with any other; in fact, I began my studies with the old stable inorganic class of remedies—which will always hold their place. I am confident that each of the classes has an important place in therapeutics, when it gravitates into that place. The synthetic remedies have the narrowest field and as a class are least useful. But, the underlying truth, the basic permanency of the influence of the vegetable remedies and the natural manner in which they stay the progress of disease, in which they influence the normal vital processes, encouraging them to reassert themselves and assume control of the vital functions of the various organs of the body, is so different from the influence exercised by any other class of medicines that naturally I have found myself developing such a predisposition to faith in these remedies as I cannot possibly have in any other class; and, yet, I by no means am ready to exclude other remedies or other measures.

I am watching, with the keenest and closest observation, the development of the serums, antitoxins, and hormones, the evolution of the truth concerning their reliable action, in order that I may see, if I live long enough, whether these may not be superior, if not in a general way, at least in certain specific lines. If they are, they should have their place; but, until they are so proven, I must necessarily keep my faith in the action of vegetable remedies.

#### America Yields All The Drugs We Need

Just at this particular time, when foreign drugs can no longer be obtained, because their importation has been cut off, we are forced to look elsewhere for our supply; and just at this psychologic moment the knowledge of our own products that I have acquired

brings me, with startling sharpness, to the recognition, if not (at least to myself) the discovery, of the fact that *American physicians have right here at home everything we can possibly need in the cure of the sick* in a most reliable, permanent, sufficient, and satisfactory class of remedies, that either have had their origin in this country or the knowledge of which has been developed in this country.

Coming now to the consideration of "American Medicine," I shall include in that term all those remedies the working-knowledge of which (the clinical observations and bedside experiences) have developed in the United States. When I speak of American medicines, I refer to those remedies that have their origin in the Americas and which have been developed within the United States.

#### The Contributions of the "Schools"

In the development of these remedies, all schools of medicine have taken part. Unfortunate it is that the dominant school has but seldom recognized any labor other than that done by its own members. This has engendered a prejudice, especially on the part of its students, that has prevented many an anxious young physician from looking into the action of some very superior agent which on occasions might have assisted him in some trying emergency.

So engrossed has this school been in surgery, and so very much has been accomplished in this field, during the time when the knowledge of these native vegetable remedies was developing, that the larger attention has been given to drugs by the adherents of the Homeopathic and the Eclectic schools of medicine; both of these being largely therapeutic rather than surgical schools, as is the dominant school.

It certainly would seem to be consistent with the spirit of the age, with the advancement of civilization, with the general intelligence of our time, and with the inclination to put down bigotry and prejudice that the surgical school should have been as willing to look into the measures of the therapeutic schools as the latter ever have been ready to consider and adopt promising suggestions of the former.

In the work of the therapeutic schools, the Eclectic physicians have paid the largest attention to the medicines of vegetable origin probably for the same reason that I have given as influencing me in this study. After this brief diversion, let us return to the subject under consideration.

My aim, as said, will be to show that those remedies that are characteristically of American origin, I have some grounds for my belief, offer a sufficiency of resource in the materia medica for the physicians of America—in fact, of any part of the world—if they desire to demonstrate their sufficiency, or, indeed, their superiority.

#### The Active Principles Developed in America

No one will deny the right of the American physician to claim that the therapeutic development of the alkaloids—the active principles—is largely the result of American industry. Many of the proximate principles of the drug-plants were originally discovered in this country, and their separation and the development of the knowledge of their specific place in therapeutics can properly be placed to the credit of American physicians.

In an article in favor of the alkaloids, *The Medical Council* for December last says that there are listed in the eighth edition of the Pharmacopoeia ten alkaloids, twenty-six alkaloidal salts, fourteen preparations of the alkaloids, besides others of this class, including seven resins, three approximate resins, and two glucosides—making a total of seventy in all. Together with those that are enumerated in "New and Nonofficial Remedies," a total of 130 have an established value; so that it may be said that active-principle medication has "arrived" in official literature.

During the early days of the alkaloids, but few outside of specialists seemed to be attracted toward them, while at the present time probably from 30,000 to 40,000 physicians in the United States depend upon these remedies as their principal medicines, while a very much larger number include at least a portion of this class of remedies.

It is now generally acknowledged that the proximate principle does not represent the whole drug in all its therapeutic influences; consequently, it is important that both the whole-plant drug and its active principle be studied, each independently. And in no country in the world, at the present time, are these drugs studied so assiduously or is there so much attention being paid to securing definite knowledge regarding both of these classes of remedies as by our own practitioners.

The very wide adoption of the alkaloids by the busy, isolated practicing physician, in his everyday practice in America, must be credited very largely to the persistence and

assiduity of one individual, namely, Dr. W. C. Abbott, just as the perfection of the fluid forms of vegetable drugs and the marked advancement of their definite, reliable, and invariable character is to be credited to one individual, Prof. John Uri Lloyd. And these two forms of organic medicine give to American physicians access to stable, reliable, thoroughly proven, and highly satisfactory remedial agents. It has taken at least half a century to accomplish this result, but I am confident that the time has arrived when we are justified in asking the world to accept the result of these observations as authentic, fully proven, and these preparations more dependable than any other known definite products.

#### Give Us Dependable Drugs

I cannot refrain from once more quoting from the article in *The Council* referred to, in order to confirm the correct character of the conclusions that our investigations have brought to us.

"The balanced therapist," we read, "has no prejudice for or against the active principle, or for or against the so called galenical products; but he has a prejudice against uncertain drugs, be they alkaloids or galenicals." Again, he says: "The day is fast passing in which 'so much' crude drug digested so long in 'so much' alcohol will pass muster as the proper way to make a tincture. This is the day of careful assay of each batch of the crude drugs and careful standardization of the finished tincture."

This method began with Eclectic physicians in the year 1870, and it is now approaching perfection in their "specific medicines."

Further, Doctor Blair adds: "We want our proximate principles and our galenicals to be equally dependable, for, we need both classes of products." And again he says: "To the physician who is obsessed by the idea that alkaloids have practically the sole place in the therapy of botanic-drug medication, we would urge a short course in the wards of any good hospital. To these men, as also to those who are prejudiced against the well-grounded advocacy of the alkaloids, we wish to urge the study of authoritative literature upon pharmacology and therapeutics."

"Some men," to conclude these quotations, "use altogether too much alkaloidal medication, while others employ alkaloids for too little if they hope to treat successfully sthenic cases of acute disease and the emergencies of practice."

To both of these, the advice is, that they study both classes of remedies until their methods are well balanced.

#### A List of American Remedies

In considering strictly American medicines, the following may be named as among the important remedies that either are indigenous to the Americas or to the United States' possessions, viz.: rhus, gelsemium, veratrum, scullcap, macrotys, capsicum, cinchona, hydrastis, berberis, avena, coca, cactus, apocynum, lobelia, ipecac, grindelia, pines and spruces (turpentine), prunus, tolu, yerba santa, collinsonia, papaya, cascara sagrada, podophyllum, leptandra, iris, chionanthus, jalap, rhubus, geranium, echinacea, baptisia, phytolacca, stillingia, gaultheria, hamamelis, thuja, uva ursi, kava, hydrangea, salix nigra, saw-palmetto, damiana, serpentaria, black haw, senecio, helonias, caulophyllum, polygonum, erigeron, epigelia, guaiacum.

These remedies not only are indigenous to America, but they have been developed almost exclusively in this country. In addition to these, there are other quite well-known remedies that are important in narrower fields; among them being lycopodium, blood-root, sticta, asclepias, boneset, dioscorea, juglans, eupatorium, mitchella, and fraxinus.

But these two lists do not include all the remedies that I would call strictly American Medicine. In addition, as I have stated, we have a right to claim as a part of American medicines those remedies the therapeutic properties of which have been largely developed in our country; for, although now being raised in this country, we have, for most of them, been depending upon foreign countries to supply us. Under this heading, there may be mentioned aconite, bryonia, cannabis, conium, hyoscyamus, oenanthe, ergot, chamomile, pulsatilla, mistletoe, nuxvomica, ignatia, eucalyptus, belladonna, calabar-bean, convallaria, adonis, and crataegus. There are, in addition to these, a number of remedies, such as digitalis, that have been used freely in the old country, but their action has been studied more effectually among American physicians, the reports upon which have very much added to their value to the clinician. I could make up quite a list of remedies of this class.

We have a right, also, I think, to include among American medicines a considerable number of mineral remedies that once were well known, but were retired, to a large extent, during the "surgical period" of

medical progress, and are now being restored again. While more reports are reaching us from Europe than from America concerning, for instance, the use of iodine as an antiseptic, our own observations have been equally as important, and it has been left largely to American physicians to undertake to apply iodine, in the form of vapor, in the treatment of wounds and open ulcers.

Similar statements can be made concerning a large number of remedies. When we come to the consideration of biologic and laboratory products, we could name a number of firms in this country that have taken the lead in the development, perfection, and manufacture of serums, antitoxins, and bacterins; and their products have not been excelled by foreign manufacturers.

All this is contributed to American medicine, and, when these facts are well considered, I am confident that the readers of this journal will agree with me that we need no longer go abroad for our tools wherewith disease shall be controlled and cured, but that we may use that which we have of our own in medicine, and the methods that American physicians have developed; and, when applied in specific and definite lines and in a specific manner, I will assert that we can readily prove that we have many things superior to any other nation.

It behooves us, then, to cooperate and work without prejudice, with energy and zeal, with the definite object in view of establishing for American physicians a reputation for superiority both of product and method, and of results as well. I shall take up, in another article in this journal, definite measures by which these facts can be proven.

Very much can, and will, be said further in this line, but to get at once at the crux of the whole question, I want to refer to a study and investigation that was made, in 1912, concerning the action of vegetable remedies and their use.

#### Some Studies Anent Vegetable Drugs

The Committee of the United States Pharmacopeia has, among its other duties, the collection of statistics regarding the frequency of the use of the official and nonofficial drugs by the medical profession in the United States. At the time in question, an independent investigator was requested by the American Pharmaceutical Association to look into this matter and report at its next annual meeting (in 1912). This, to a limited extent, was accurately done, 30,000 physicians having been consulted. These physicians

were located in every section of the country. They were asked from what college they had been graduated and whether they were qualified to practice medicine under the state laws, but no other information anent their professional affiliations was solicited. They were selected without regard to any school of practice. Those were selected who were engaged in the general practice of medicine, choosing a moderate number of physicians in the larger cities, in an effort to equalize the reports of the city and the rural practitioners. More than 10,000 reports were returned on the blanks that had been sent out.

Some most surprising revelations were made. Among the remedies that I shall mention of those that were reported, only the following were not official in the U. S. P. (all others being official remedies); namely: cactus, echinacea, thuja, bryonia, pulsatilla, collinsonia, passiflora, chionanthus, gaultheria, dioscorea, baptisia, trifolium, drosera, avena, ignatia, adonis, pinus canadensis, chelidonium, and erigeron. (The oil of erigeron was official.)

#### The Surprising Vogue of Cactus

Of these, it will be a surprise to the readers to find—notwithstanding cactus has been unreservedly condemned by the A. M. A. Council on Chemistry and Pharmacy—that it stood first in the list, 6229 out of the 10,000 physicians reporting that they were using cactus.

Now, please, bear in mind again that all but those I have mentioned as unofficial are official in the 1900 edition of the U. S. P. Hydrastis, aconite, gelsemium, and ipecac were named by more than 5500 physicians.

Between 5000 and 5500 reports mentioned digitalis, ergot, belladonna, nux vomica, hyoscyamus, and echinacea—in the order here shown.

Between 4500 and 5000 physicians mentioned viburnum, valerian, podophyllum, thuja, opium, cascara sagrada, bryonia, colchicum, capsicum, lobelia, pulsatilla, apocynum, and gentian.

Between 4000 and 4500 mentioned saw-palmetto, veratrum viride, hamamelis, phyto-lacca, viburnum, macrotys, collinsonia, can-

nabis, passiflora, chionanthus, arnica, strophanthus, cinchona (quinine).

Between 3000 and 4000 physicians mentioned sanguinaria, caulophyllum, cinnamon, rhus toxicodendron, colocynth, gaultheria, dioscorea, baptisia, asclepias, elaterium, iris, spearmint, stillingia, senna, leptandra, charcoal, helonias, jaborandi, grindelia, gossypium, stramonium, aletris, hydrangea, and licorice.

Between 2000 and 3000 physicians mentioned cubeb, guaiacum, taraxacum, santonica (santonin), calendula, crataegus, jalap, rhubarb, triticum, damiana, berberis, physostigma, sarsaparilla, xanthoxylum, trifolium, drosera, quassia, avena, scull-cap, ignatia, squill, erigeron, coca, adonis, conium, uvi ursi, lycopodium, convallaria, geranium, senega, staphysagria, chelidonium, pinuscanadensis, hops, calumbo, sassafras, eupatorium, and serpentaria.

I will not enumerate specifically those that were mentioned by less than 2,000, but among them are a great many that are named in the Dispensatory, as above specified, and a few that are quite well known. This investigation would certainly change our sentiment concerning the selection of vegetable remedies.

In order to establish that these reports did not represent any particular school of medicine, a similar questionnaire was submitted to Eclectic physicians. In comparing the answers sent in by this group of physicians with the reports made by physicians of all other schools, it was found that there was a great deal of similarity of opinion as to the action of certain given drugs.

I have said that more than 6000 replies in the first report mentioned cactus. In this later comparative report, it was found that cactus was twelfth in order among Eclectic physicians, while it was the ninth among those physicians belonging to other than the Eclectic school. Among the first 13 remedies that were found to be classed about the same by Eclectic physicians and by those of other schools were the following: gelsemium, aconite, bryonia, macrotys, echinacea, belladonna, veratrum, cactus, nux vomica, phyto-lacca, and pulsatilla.

(To be continued.)



# What Others are Doing

## BACTERICIDAL PROPERTIES OF COPPER AND SILVER

Since writers have doubted the direct bactericidal action of certain metals (e. g. copper, silver), Natonek and Reitmann, of Czernowitz, proved the fact (*Zeit. f. Hyg. u. Inf.*, Bd. 79, H. 2) by means of the following experiment: They placed clean coins upon a sterile agar-plate and allowed them to remain for a number of hours. After removing the coins, bacteria were sown all over the plate, and no growth occurred on the agar where the metal had lain, and even for some distance beyond the edges.

## THE CARMINE-TEST FOR LEARNING THE MOVEMENT OF THE GASTRIC CONTENTS

While radiography offers positive evidence of the forward movement (or the stagnation) of the gastrointestinal contents, Doctor Strauss, of Berlin, warmly pleads for the more general adoption of the carmine-test for the same purpose (*Arch. d. Verd.-Krankh.*; cf. *Muench. Med. Woch.*, 1915, p. 442), maintaining that, aside from its simplicity and cheapness, it answers the same purpose, at least for all ordinary purposes, of determining how long ingesta remain in any portion of the digestive tract.

In the same number, Doctor Schuetz, of Wien, criticizes adversely all the "innumerable" methods proposed as substitutes for the one devised by himself—that is, the use of the sound for withdrawing from the stomach specimens of its contents for examination. This method, he asserts, should find general acceptance.

## DIPHTHERIA-CARRIERS, AND THE NOSE

For years, says V. Engelmann, of the ear and throat department of the Israelitic Hospital at Hamburg (*Muench. Med. Woch.*, 1915, p. 397), he has maintained that little progress will be made with regard to the carriers of diphtheria-bacilli until first of all general attention is paid to the nose of those

who have had the disease or been exposed to the infection. In the present brief communication, Doctor Engelmann merely presents details concerning four children of school-age whom the mother brought for inspection, after a fifth child had recently died of diphtheria.

All four presented the appearance of health, although one had a slightly sore nasal ala, while in another one the tonsil was slightly reddish, with a hardly visible spot; and in the throats of these two a very few bacilli of the short variety were found. However, when the noses of these children were tested, all four revealed the presence of large numbers of the long and the short forms of the diphtheria-bacillus, besides the usual staphylococci and diplococci. The point made is, that these children attend school and that under certain favoring conditions the diphtheritic germs will become activated and they thus become a focus of infection. Hence, *cherchez la nez—toujours*—always.

## HEXAMETHYLENAMINE IN TYPHUS FEVER

In a preliminary communication to the *Muenchener Medizinische Wochenschrift* (1915, p. 418), B. Coglievina, stationed in the military hospital at Graz, speaks in the highest terms of the service given by urotropin (hexamethylenamine) in combating typhus fever; although, he admits, it has been thus used in but a few cases. The idea underlying his trials in this direction was, that the substance is decomposed in the body into formaldehyde and thus serves as a constitutional disinfectant. He calls the results observed in this malignant disease "remarkable."

One notable observation in this urotropine-treatment—one in agreeable contrast from the quinine-therapy—was, that the disturbances of the central nervous system scarcely were worth noting; the author inclining to explain this by the proven fact that hexamethylenetetramine specifically exerts a bactericidal action in the cerebrospinal canal. Furthermore, the patients so treated



remained free—or almost so—from the frequently very severe enteric symptoms attacking typhus-patients.

As to the dosage, Coglevina was guided by the fact, established by J. Crowe, that a daily dosage of 5 Grams of urotropin is capable of keeping the bile sterile. So, each patient was dosed as follows: 1 Gram of the remedy three times on the first day, four times on the second, and on the third day, and subsequently, five times. The precaution is necessary, to test the urine daily; however, in these patients, neither renal nor vesical disturbances were evidenced.

Incidentally, the only other treatment consisted in combating the high fever with cold-packs for the thorax and legs, and application of an ice-bag for intense headache.

### FROSTBITE EXPERIENCES

Frostbite is presenting serious problems in the European armies, especially among the Germans. In one article, the *Wiener Klinische Wochenschrift* describes a series of 105 such cases; of these, 3 required amputation through the thigh. Besides the surgical treatment demanded, the methods applied were, alternate hot and cold baths, carbon-dioxide baths, and hot- and cold-air douches; wet dressings of pepsin and hydrochloric acid, to separate necrosed tissues; sterile gauze, smeared with boric-acid salve to cover the necrosing portions.

In *The British Medical Journal*, Davis writes that the most satisfactory treatment found was this: cocaine, 8 grains; olive-oil, 4 drams; lime-water, 4 drams; a little to be rubbed in twice a day, and the feet then wrapped in cotton wool. The addition of 2 ounces of liquid paraffin keeps the mixture from drying rapidly and delays oxidation. After the oil has dried on the feet, they should be powdered with a mixture of camphor, 25 grains; zinc oxide, 4 drams; starch, 4 drams. When the acute state has passed, the oil is mixed with increasing proportions of carbolic oil.

It is not always easy to tell just how much of the affected tissues is going to die. Generally some of the tissue will perish, while some may perish if the applications made are likely further to depress the vitality of the weakened tissues. Cocaine acts by dilating the vessels and letting in a better nutritive supply of blood.

Some years ago, the present writer had an edifying experience with the application of nuclein to an area where it was doubtful

whether the tissues would live or die. They lived; and he has always since acted on this hint of improving the local nutrition when needed. A friend accomplished the same object by applying a crushed tablet of the Bulgarian bacillus, and he testified that the almost instant regeneration of the imperiled parts was amazing. We have repeated this observation and believe that this principle should be widely applied in the treatment of wounds, as well as of frostbites.

With many, the application of local remedies is as senseless as the commingling of so-called expectorants. The doctor gets to using some one ointment (citrine or red mercuric oxide, zinc oxide or some advertised preparation) and applies that whenever he uses any ointment. Selection of an antiseptic, sedative, irritant, absorbent, protective, antipruritic or nutritive never occurs to him. Yet, nothing is easier than to observe the local action of remedies applied to the surface of the body, or to decide which is needed in each given case.

The Bulgarian bacillus is destructive to some morbid germs; but which ones, or how generally it is thus applicable, is yet to be defined by wide experiment. The early observations show that it is worth while to push this experimentation to the limits. Where is there another local remedy that is as safe and, yet, possesses such possibilities of usefulness as this one?

### "ROPE" IN BREAD

Infection of bread by the potato-bacillus (*bacillus mesentericus*) causes the condition commonly known as "rope." During July, 1914, says G. L. Qualis (*Milit. Surg.*, June, 1915, p. 517), the entire bread supply of that part of the second division of the United States army stationed at Texas City, Texas, was infected with this bacillus. For the first few hours after baking, there was little or no change at ordinary temperature, but after twenty-four hours an odor developed not unlike that of unripe canteloupe. A few hours later, yellow or brown spots appeared and the bread became sticky in the center, these soft spots spreading rapidly, until within thirty-six to forty-eight hours the entire central portion of the loaf became a semifluid sticky mass, totally unfit for food. This portion of the loaf could be pulled out into long strings or ropes. In smears made from these ropes and stained with methylene-blue, the microscope revealed the presence of large numbers of a thick bacillus, with

rounded ends, together with free spores, both spores and bacilli being gram-positive.

A large amount of flour had been used in making this bread, and an investigation showed that this batch of flour was contaminated with the potato-bacillus. Some of these bacilli, it then developed, were present in all of the samples of flour furnished, even when coming fresh from the mill. Condemnation of the stock of flour was seriously considered; but it was finally discovered that the addition of acetic acid (or vinegar), in making the dough, served to prevent the development of the "rope." Tartaric acid likewise gave this protection, but it has no superiority over acetic acid except that it is solid and, hence, easy to transport.

#### TOO MUCH OR TOO LITTLE PROTEIN

If, on the one hand, cancer is caused by the consumption of *too much* animal food, as claimed by Beveridge (*N. Y. Med. Jour.*, Aug. 21, 1915, p. 387) and others; and, on the other hand, pellagra is caused by eating *too little* of the same kind of food, what, one may ask, can the average person do to escape the Scylla of pellagra and the Charybdis of cancer? Down south, if you eat too little meat, you will catch pellagra; if you eat too much of meat, you will die of cancer. And there you are!

#### OIL OF TURPENTINE FOR EXTERMINATING LICE

To some, the subject embraced in the title may seem to be overworked; and, yet, the announcement that plain oil of turpentine (rectified, of course—when accessible) will do everything claimed for the numerous other more or less expensive or rare agents must be esteemed of distinctly demologic importance; while, moreover, it should claim our attention now that louse-borne typhus fever is raging in our neighboring republic to the south.

The information in question has been published by Theo. v. Marschalko, of Klausenburg, in the *Deutsche Medizinische Wochenschrift*, who declares that the oil of turpentine is the best as well as cheapest substance for killing both body-lice and head-lice, as well as their eggs, besides other parasitic vermin. And what, from the sanitarian's point of view, is of greatest importance is, that this article can be obtained anywhere and because of its cheapness may be employed freely and without stint. It may be

applied direct or, for textiles and furniture, in the form of spray. Of course, the odor is objectionable, and clothing must be washed (lest the oil resinify in it), but that can not weigh when masses of naturally unclean people are concerned—such as the Mexican peons or the indigent negroes of the South—and at the same time economy and availability must be considered. One fact must be borne in mind, though; namely, that certain individuals are extremely sensitive to the action of oil of turpentine, in various ways, even sleeping one night in a freshly painted room being enough to cause bloody urine.

Incidentally, many military physicians now also seem to employ kerosene freely for the same purpose.

#### THE ERADICATION OF LICE

During recent months, we have published several abstracts from German and other foreign journals relative to the eradication of lice. In view of the fact that typhus fever and doubtless other diseases are transmitted by this troublesome parasite, this is a matter of considerable medical importance. In *The Journal of the American Medical Association* (Jan. 22, p. 273), we find a suggestion, originally proposed by Sabouraud, that xylene, a colorless liquid coal-tar product, will be found an effective pediculicide.

Xylene has a penetrating but not unpleasant odor and mixes with alcohol and ether, but not with water. Not only will it destroy the lice, but it will penetrate their ova and kill these also. When undiluted, it causes a sharp, burning sensation of the skin, but the pain thus produced does not last long and no blisters or dermatitis follows. The xylene readily evaporates and is highly inflammable, hence, should never be used near a fire or open flame.

A mixture of xylene, alcohol and ether is recommended by Faniel as being safe and efficient. For head-lice, cotton may be soaked with the mixture and the scalp thoroughly gone over with this xylene mixture, all the strands of the hair being drawn through the cotton saturated with the solution. Generally one application is sufficient to destroy all the parasites and nits. A treatment of one-half hour will be often fully effective, even when the hair is long, as in girls and women.

If the skin is broken by scratching, Lane recommends the application of a mixture of xylene with petrolatum, in the proportion of 4 parts of the former to 30 parts of the latter,

this to be followed latter by the xylene solution already suggested.

#### THE GERMAN CAMPAIGN AGAINST LICE

We have printed a good many quotations from German literature relative to the danger from typhus in the European war-zone and the role played by lice in its causation. That this disease is dangerous to the surgeon as well as to the soldiers, is demonstrated by the fact that it has claimed some illustrious medical victims—among them Jochmann and von Prowozek, whose claims to distinction, curiously enough, were largely based upon their investigation of this very ailment.

Without going into details regarding the measures and the practice resorted to for destroying the lice, it is interesting to find that most German investigators seem to have come to the conclusion that sulphur vapor is the simplest and cheapest as well as the most reliable agent for the destruction of the lice and their eggs in clothing and buildings.

Some very interesting experiments have been tried, especially in the prisoners' camp at Koenigsbruck. Nearly all the Russian prisoners were infested with lice and thus provided good subjects for experimentation. Their clothing was sterilized in sealed rooms, and the sulphur vapor developed was exceedingly concentrated.

#### NITROBENZOL-POISONING CAUSED BY INHALATION

Doctor Schultz reports the poisoning of six soldiers in his regiments by nitrobenzol-vapor, a constituent of a Polish proprietary exterminator of body-lice. The men (*Muench. Med. Woch.*, 1915, p. 458) had sponged their bodies with the liquid, while one also had sprayed his garments and then lain down to sleep. The latter exhibited the most severe symptoms and barely escaped succumbing. The room was filled with the vapor, which also seemed to contain some petroleum-ether.

All of the victims exhibited a peculiar yellowish-white hue of the skin, shading lightly into gray, and their lips were of a leaden-gray color; all experienced mental disturbances, while part of them had attacks of vertigo and fainting.

The one seriously affected lay unconscious seemingly doomed, breathing rapidly, with bronchial râles developing, and the pupils greatly contracted. The characteristic dusky color of the skin and the lips was very marked;

sharp pinching of the skin produced no sensible reaction. This patient, as well as the rest, was sponged over thoroughly, garments were changed, the room was ventilated; then was given injections of camphor and caffeine. Two hours later, he showed signs of pain when pricked, and consciousness slowly returned during the following day.

One other of the men had reapplied his chest protector and, so, toward evening, became unconscious, and did not recover until the next morning. The men retained their pallid appearance and feeling of weakness for several days. In one of them, albuminuria appeared, for which he was sent to the hospital.

We urge every reader of CLINICAL MEDICINE, working in the industrial centers, to familiarize himself with the symptoms and treatment of nitrobenzol poisoning, since this substance is one of the essential "primaries" used in making aniline dyes, photographic chemicals, coal-tar synthetic drugs, and high-explosives. And this industry is growing in America—and bound to grow.

#### POISONING FROM MERCURIAL INUNCTION

In discussing the various pediculicides—in connection with typhus fever—Dr. O. v. Herff (*Muench. Med. Woch.*, 1915, p. 457) mentions the fact that he personally once was seriously poisoned by a single inunction of one of his arms with plain mercurial ointment, which had been allowed to remain on for twelve hours. He tells that this brought on stomatitis, and salivation, besides other mercurial symptoms, which resisted treatment for several months.

This reminds us that in a recent American medical journal (which we have mislaid) fatal poisoning followed the use of several bichloride of mercury tablets in a solution used for vaginal douching.

#### CALCIUM SULPHIDE AS AN ANTIDOTE FOR MERCURY POISONING

We find in *The Lancet-Clinic* of December 18, last, a report of the use of calcium sulphide as an antidote for bichloride of mercury poisoning, presented by J. H. Wilms (see p. 555). He tried this remedy out experimentally on a dog which had received 7 1-2 grains (tablet) by mouth. Two days later, 7 1-2 grains of calcium sulphide was injected into the jugular vein of this animal, and after two days more it had fully recovered.

In 1913, says Doctor Wilms, while an interne in the Cumberland Street Hospital in Brooklyn, he had a patient who had taken with suicidal intent, 56 grains of bichloride of mercury by mouth. The woman made an uninterrupted recovery after having taken 1-10 grain of calcium sulphide every half hour during a period of four days.

Wilms now has the records of 6 cases of mercury-bichloride poisoning treated with calcium sulphide. Of these, 5 have recovered, while 1, who had taken 110 grains of bichloride of mercury and was moribund when first seen by the Doctor, has died.

Doctor Wilms explains that when calcium sulphide comes into contact with bichloride of mercury, double decomposition takes place, the  $\text{CaS}$  plus  $\text{Hg Cl}_2$ , yielding  $\text{HgS}$  (mercury sulphide) plus  $\text{Ca Cl}_2$  (calcium chloride); the former insoluble and the latter inert. Calcium sulphide is water-soluble in the proportion of 1 : 500, or about 1 grain in 1 ounce, when boiled.

Do not forget Carter's mercury antidote. It contains sodium phosphite and sodium acetate.

#### THE ALLEN TREATMENT OF DIABETES

No method of treatment of diabetes suggested within recent years has attracted such favorable attention from the medical profession as that offered by Dr. Frederick M. Allen, now connected with the hospital of the Rockefeller Institute for Medical Research. Already there is an extensive literature upon this method of treatment, while one book has been published devoted to this subject, namely: "The Starvation Treatment of Diabetes," by Lewis Webb Hill and Rena S. Eckman.\* We are informed that a second edition of this book is now ready. In due season it will be reviewed in these pages.

In *The Journal of the American Medical Association* for September 12, 1914 (p. 939), Allen described in some detail his experimental investigations conducted upon dogs, these leading to the introduction of the improved dietetic therapy now adopted. Quoting Friedenwald and Linbaugh (*Interst. Med. Jour.*, Feb., 1916, p. 73), it was observed "that by destroying a portion of the pancreas (of dogs) and thus producing glycosuria, this condition could be overcome by fasting and that the animal could be placed on a diet which would maintain life without producing glycosuria again."

Allen applied this principle to the treatment of patients affected with diabetes; in other

words, the essential element in the treatment is the reduction of the intake of food, especially of carbohydrates, to the point where sugar disappears from the urine and, presumably, from the blood. This involves, first, a period of absolute abstention from food, or starvation; and for this reason the Allen method of treatment is often called the "starvation treatment" of diabetes. There are, however, other important features, which are briefly epitomized by J. T. Halsey (*New Orleans Med. and Surg. Jour.*, Feb. 1916, p. 501) as follows:

1. A period of absolute fasting, lasting ordinarily from one to four or five days—in extreme cases, as long as ten days.

2. A succeeding period of underfeeding, during which the patient is given much less food than is usually considered necessary. This period varies in length according to the presence or absence of sugar in the urine.

3. A very careful determination of the quantity of food (not only carbohydrates, but also proteids and fats) which the patient can consume without producing glycosuria or glycemia.

4. Careful avoidance of increase of weight, unless the patient is decidedly under weight.

Taking up these factors in detail:

1. *The inaugural fast.* It is stated that as a rule the inaugural fast need not be longer than two to four days. It is continued, as a rule, about twenty-four hours beyond the time necessary to secure absolute disappearance of sugar from the urine, together with disappearance or marked diminution of the acidemia. During the fasting period, the patient was originally allowed no food whatever, with the exception of whisky or brandy. Of this alcoholic, from 4 to 8 ounces may be taken in each twenty-four hours, in small doses at from one- to three-hour intervals. The alcohol is allowed, not as a stimulant, but purely as a food, since it provides available caloric values without danger of production of glycosuria.

The patient is allowed to drink plenty of water or weak tea (the latter without sugar or milk), and more recently also a small amount of beef broth (2 ounces four to six times in the twenty-four hours), provided the fast is prolonged beyond two days. If there is acidosis, alkalis may be given; and it is stated by Halsey that, even if no acidosis be present, it is probably wiser to give alkalis when starving the patient for the first time.

2. *The stage of underfeeding.* Following the period of fasting, the patient is put upon a restricted carbohydrate diet, in order to

\*Published by W. M. Leonard, Boston Price, \$1.00.

establish the degree of the patient's tolerance. Vegetables containing 5 percent of carbohydrates are first allowed. An excellent diet list, covering the food requirement in these cases, with carbohydrate percentages, is given by Joslin (*Amer. Jour. Med. Sci.*, Oct., 1915). Among the 5-percent carbohydrate-vegetables, he mentions spinach, beet greens, sauerkraut, string-beans, asparagus, cucumbers, dandelion, cauliflower, tomatoes, rhubarb, eggplant, cabbage, radishes, pumpkin, and kohlrabi.

At first, about 5 ounces (150 Grams) of these vegetables should be given per day. In severe cases, when the green vegetables cannot be partaken of without producing glycosuria, they should be boiled three times, without change of water, thus reducing their carbohydrate content nearly one-half. The quantity of the 5-percent carbohydrate-vegetables can be increased by 3 or 4 ounces a day until the daily ration reaches 16 to 20 ounces (500 to 600 Grams). This will give a total carbohydrate content of 5-8 to 1 ounce (25 to 30 Grams).

If no sugar has appeared in the urine, the food then can be gradually increased by the addition of vegetables containing higher percentages of carbohydrates. For instance, the following vegetables contain 10 percent: onions, squash, turnips, carrots, okra, mushrooms, beets; the following contain 15 percent: peas, artichokes, parsnips, lima beans; the following, 20 percent: potatoes, shell beans, baked beans, green corn, boiled rice, boiled macaroni.

It is now permissible to add fruits, beginning with those containing the smaller percentage of carbohydrate, and increasing gradually, provided tolerance is maintained, until the patient is taking about 1 ounce of carbohydrate to each 20 pounds of body-weight. The reappearance of sugar or of diacetic acid in the urine is a sign that all nourishment should be stopped for twenty-four hours, food being resumed with about half the maximum ration required up to this point.

3. *Tolerance for other forms of food.* When there has been no glycosuria for two days, two or three eggs may be given, and, if no bad results follow, the number may be increased by two each day, until a daily ration of six is reached; or, meat may be allowed, increasing the amount by about 2 ounces daily, until the patient is taking 1-6 ounce of protein (about 2-3 ounce of meat) per 10 pounds of body-weight, daily. The reappearance of sugar or of diacetic acid calls for the same

measures as if caused by too large a percentage of carbohydrates.

Soon after proteins are allowed, small amounts of fat, in the form of butter and bacon, are permitted. This quantity should not exceed 1 ounce of the former or 4 ounces of the latter, until the patient is getting his full protein ration. At this time, the fat may be increased by 1-2 to 1 ounce daily, until the patient holds his weight or is receiving about 2-3 ounce per 10 pounds of body-weight.

4. *Control of weight.* Heretofore it has been almost an axiom that diabetics should be made to put on flesh, if possible. Allen's view is opposed to that hitherto advanced in this respect. Unless the patient is decidedly under weight, an increase is considered distinctly undesirable and fraught with danger. As a general rule, Allen advises that the patient be brought back to a weight 10 or 15 pounds under his normal figure, providing this indicates a fair degree of nutrition. If the patient is obese, he considers it desirable to reduce the weight very decidedly.

*Periodical fast-days.* If the carbohydrate tolerance is very low, that is, if below 2-3 of an ounce (20 Grams) of carbohydrate, a weekly fast for twenty-four hours is prescribed; while, if the condition is less severe, the patient having a tolerance of 2 ounces (60 Grams) of carbohydrate, a semi-fast-day is prescribed every seventh day, during which the patient is permitted the 5-percent vegetables only, and in amounts totalling only half the usual carbohydrate ration.

Allen considers these fasting-days of the greatest importance, for two reasons: first, they build up and protect the tolerance, and, second, they serve to bring home to the patient the importance of dietetic care.

Quite recently (*Boston Med. a. Surg. Jour.*, Nov. 11, 1915), Allen has recommended exercise in addition to the dietetic treatment just advised. The forms suggested are: running up and down stairs, jumping the rope, throwing the medicine-ball, and even such games as tennis, provided the patient has established a fair degree of tolerance. When first undertaking exercises, care should be taken that the patient does not suffer from overweariness, nervousness or insomnia as a result. Doctor Allen states that through these exercises "it is hoped that an end may be put to the period of pale, feeble diabetics, dressed in double underwear, while hugging the radiator and growing more neurasthenic all the time."



Physicians who have employed the Allen method of treating diabetics are enthusiastic in its favor. For instance, Friedenwald and Linbaugh, already cited, say:

"We have thus far treated 20 cases according to the Allen plan. Of these, 3 were severe cases, 10 moderately severe, and 7 mild. All were rendered sugar-free in from one to four days, and all have been kept free of sugar, with the exception of one case, in which the patient has not followed the dietary restrictions. In a very few instances in which sugar reappeared, this condition was overcome by a single day's fast. All the patients are in good condition, and are carefully following their dietary regulations."

The patients treated by Allen at the Rockefeller Institute were all of a severe type and for the most part presented very unfavorable prognoses. Of 40 reported, 35 were alive after some months of treatment, and the great majority were in a satisfactory condition. Of those who died, 1 left the hospital for disciplinary reasons; the other 4 were suffering from severe complications, such as advanced cardiac, renal or pulmonary disease, which were alleged to be more truly the cause of death than was the diabetes. As Halsey says, these results not only are satisfactory, but they are astonishingly good, in view of the character of the cases treated.

#### THE INDICATIONS FOR ACONITE

In an article appearing in the department of Modern Treatment and Preventive Medicine of *The New York Medical Journal* (Jan. 22, 1916, p. 178), A. D. Bush outlines the indications for the use of aconite as follows:

"The main indications for the use of aconite are definite and depend upon a curious physiological condition. With some patients, and under some conditions of acute infection, like that of acute bronchitis, the reaction of the system is almost violent. The temperature of the patient rises rapidly to 104° F. or higher, the heart beats with greatly increased vigor and frequency, there is a full pulse of high tension, a considerable rise in blood pressure, and an acceleration of respiratory activity. So sharp is the attack of the invading organism, and so vigorous the reaction of the system, that for the time being there seems actual danger of nature's overstepping herself and creating mischief through excessive activity. It is in such cases that some external regulating influence seems advisable.

"In such reactions, aconite is the only drug whose pharmacological provings show a true indication. Digitalis slows the heart, to be sure, but it likewise increases its force, besides producing an elevation of arterial tension. Aconite slows the heart rate by centric action, and the resulting output for each unit of time brings about a fall in vascular pressure, somewhat augmented by a probable depressant effect on the vasoconstrictor center. Incidentally there is a centric irritant action on the vagus, resulting in diminished respiration; also a coincident fall in temperature, from an assumed direct action on the thermic center. In this way, the well-designated 'runaway' condition of the circulatory apparatus is reined in and its force is directed more regularly and consistently to the task of expelling the invaders."

All of which is of great interest.

#### THE UTERINE ACTION OF EMETINE

We learn from an editorial in *The New York Medical Journal* (Jan. 22, p. 173) that the effect of emetine on the uterine muscle is the subject of some comment by Chalmers and Archibald, in a paper published in *The Journal of Tropical Medicine and Hygiene* (July 15, 1915).

The evidence submitted by the authors seems to show that emetine may cause contraction of the uterine muscle, and, so, the warning is given against its too free use during pregnancy and menstruation. It seems that a maximum of 1-2 grain daily is the safe dose during pregnancy. Given during menstruation, it may cause cessation of the flow. While no serious harm may result, it is advisable, if conditions permit, to postpone resort to the emetine until after menstruation has ceased.

#### EMETINE IN THE TREATMENT OF DYSENTERY

Further testimony to the value of emetine in the treatment of amebic dysentery is supplied by Sir Ronald Ross (until recently consulting physician on tropical diseases to the British Mediterranean Expeditionary forces) in a paper contributed by himself to *The Lancet* of January 1, (p. 1).

In his paper, Ross points out that emetine is now accepted everywhere as the remedy of greatest value in the treatment of dysentery, not indeed, because it is essentially superior to ipecac itself—as formerly used—but because the active principle can be admin-

istered in a form far less troublesome to the patient; moreover, he believes that emetine used hypodermically, brings the remedy more directly into conflict with the amebas imbedded in the floors of intestinal ulcers. Still, the powdered ipecac continues to hold a place in therapy, because of the possibility of its attacking the amebas located on the surface of the mucous membrane lining the intestine. "As an immediately applicable routine treatment," the author adds, "the hypodermic injection of emetine hydrochloride has certainly become a great boon to humanity, for which we owe a debt to Sir Leonard Rogers which cannot ever be repaid."

In discussing the forms of dysentery, Ross points out that the bacillary type prevailed most extensively among the British troops near the Mediterranean and the Red Sea until midsummer of last year. After that, there occurred an epidemic of the amebic type of dysentery, especially during July and August. At that time, Ross was on duty in Alexandria. This epidemic continued until about the end of September, after which, possibly as a result of the large use of emetine in early cases, possibly as a result of the natural decay of the epidemic, the amebas began to become more scarce. During the winter, he was told by men who have done work in Egypt a long time, the amebic dysentery is likely to be supplanted by bacillary dysentery.

Recurring to the treatment of dysentery, Sir Ronald Ross declares that in the bacillary type the sulphates of magnesium and sodium are practically specific, just as emetine is specific in the amebic type. While many believe that emetine is powerless against bacillary dysentery and the saline purgatives are powerless against amebic dysentery, it was the practice of the physicians in the British Egyptian service to employ the emetine in every case of suspicious dysentery, without waiting for a definite diagnosis as to the exact nature of the attack. This order, in his opinion, was absolutely demanded; and, the procedure proved very beneficial; first, because best results are obtained from emetine when it can be given early before there is extensive undermining of the intestinal mucosa; and, second, because there are undoubtedly many cases of dysentery of a mixed type, that is, both bacillary and amebic. Between 10 and 20 percent of the patients in which the emetine was employed were not cured; that is to say, they either died or the disease gradually merged into a chronic form. Most of these cases occurred in

patients who had not received the emetine early in the course of the disease and in whom, therefore, the mucosa was probably destroyed over a large surface before treatment was begun.

As a rule, emetine hydrochloride was given hypodermically in doses of 1 grain a day, either in one injection or in two doses, of 1-2 grain each, morning and evening. This treatment is usually continued for from three to five days, according to the custom of the different hospitals, followed by an intermission of three to five days, during which the injections were dropped. Other practitioners preferred to continue the emetine daily for some weeks, without intermission.

In one hospital, three patients died of dysentery, no other obvious cause being observable, and some suspicion was aroused that these deaths may have been due to heart failure resulting from a cumulative action of the alkaloid. However, after a careful examination of these cases, Ross is inclined to believe that evidence to support this position is unsound. However, the practice has gradually crystallized into the formula that, unless there is strong reason to the contrary, the emetine should be remitted for a time after about ten days of continuous administration.

#### SERUM-SICKNESS FOLLOWING DIPHTHERIA-ANTITOXIN INJECTIONS

With a view to ascertaining the frequency and severity of serum reactions following injections of diphtheria-antitoxin, 500 patients treated with this remedy in the Louisa Minut Hospital, New York, were selected for observation by Dr. Mills Sturtevant (*Arch. of Intern. Med.*, Jan. 15, p. 176). The antitoxin employed was the concentrated preparation prepared by the New York Department of Health. A skin-rash was taken as a determining factor, although other symptoms of some importance occurred in various cases, including malaise, nausea, headache, pains in the muscles, slight rise of temperature, and the like.

Of the 500 cases reported, 422 received antitoxin only once, while 78 received two or more injections. Of the 422 receiving one injection, 84, or 20 percent, showed symptoms; the percentage being considerable higher in those given two or more doses. The frequency of the reaction increased with the amount of serum given. The rashes, were of the urticarial type, in 63 out of the 84 cases, the remaining 21 being erythematous.

Of the 63 urticarial rashes, 43 were severe and general in distribution, the other 20 were mild and limited. The severity of the urticaria seems to be proportionate to the quantity of serum injected. In 16 of the patients, nausea and vomiting supervened, 4 had some edema, 25 showed some rise in temperature, and 13 experienced pains in the joints.

Doctor Sturtevant's summary, based upon his analysis of these 500 cases, is as follows:

1. A varying proportion of patients receiving modified horse-serum react by developing a rash and various other symptoms. The larger the amount of serum, the larger the proportion of subjects reacting.

2. Most patients react somewhere between the fifth and ninth day, although the reaction may occur as early as the first and as late as the seventeenth day, perhaps even later. The time of reaction has no relation to the dosage.

3. The rash may be erythematous or urticarial. The larger the dose, the greater is the proportion of urticarial rashes. Vesicular urticaria is sometimes, though rarely, seen.

4. Nausea and vomiting occur in about 1 out of 5 of the reacting patients, and they are more likely to occur, and to be more severe and prolonged, if the dose of serum is proportionately large.

5. Albuminuria and edema occur occasionally, either together or independently.

6. Joint symptoms are observed in about 14 percent of reacting cases, and may be severe.

7. When administering a given amount of serum in two or more doses, the reaction does not seem less likely to occur than if given in one injection.

#### TETANUS IN THE GREAT WAR

According to A. T. MacConkey (*British Med. Jour.*, Dec. 11, 1915, p. 849), tetanus has been a good deal more frequent during the present war than in previous contests. He has collected statistics showing that, in the Crimean War, the cases of tetanus among the wounded numbered 0.15 percent; in the American Civil War, 0.2 percent; in the Russo-Turkish War, 0.12 percent; while during the present war it has reached the high point of 0.65 percent.

Tetanus antitoxin is being very extensively used, to prevent the disease, and war experience has confirmed the pre-war conclusion that from 500 to 1000 United States tetanus-antitoxin units is a sufficient prophylactic dose for the majority of injuries, provided

it is given early. In severe wounds, it is advisable to repeat this dose once or twice at intervals of a week.

#### RESUSCITATION FROM GAS ASPHYXIA, USING RED BLOOD-CELLS

Considerable newspaper publicity has been given during the last few weeks to a method of resuscitating victims of illuminating-gas asphyxia devised by Dr. W. H. Burmeister, of Chicago, who gives his method and a record of the animal experimentation upon which it is based in *The Journal of the American Medical Association* (Jan. 15, p. 164). This new method is based upon an effort to restore to the blood a vehicle that has the oxygen-carrying power of the normal hemoglobin—the latter being destroyed or impaired by the carbon monoxide of the gas.

The oxygen-carrier provided consists of carefully collected and preserved erythrocytes, or red blood-cells. Its value was determined by a series of experiments made with rabbits and dogs, and the blood-cells were obtained by bleeding the animals from the femoral artery directly into a sterile flask containing sodium-citrate solution in water; the sodium citrate being used to prevent coagulation. This was obtained in the following way:

This blood was received directly into a sterile flask which contained 25 Cc. of a 10-percent sodium-citrate solution in water. The blood was allowed to flow in until the flask contained 250 Cc. of blood-citrate mixture. To this, was then added 250 Cc. of sterile Ringer's solution containing 2.5 percent of dextrose. After gently mixing the contents by oscillating, the flask was placed in the dark at + 4 C. until the time of its transfusion. The bottle and its contents were centrifuged just before transfusion and the supernatant fluid, together with the layer of white corpuscles, was removed. This left, usually, 125 to 150 Cc. of a rather thick erythrocyte suspension. In this manner, dogs' corpuscles were kept three or four weeks, without any gross or microscopic evidence of deterioration being evident.

We shall not attempt to give the complete details of Doctor Burmeister's experiments, but he showed that dogs which had been exposed in closed compartments to gas-fumes for 60 to 90 minutes, or until respiration had ceased and in some instances the heart stopped beating, could be revived with this treatment. Immediately upon removal from this chamber, the heart's action was started again (if it had

already stopped) by thoracic massage. If it could not be made to beat again, it was useless to proceed further.

Meanwhile, artificial inflation and deflation of the lungs was practiced, and the external jugular vein was laid bare with a small incision and a small glass cannula introduced, this being equipped with a rubber tube attachment which could be fitted to a large Luer syringe. The erythrocyte suspension already described, previously warmed to 37° C. and fortified by the addition of one Cc. of a 1:1000 epinephrin solution, was now injected into the carotid; about 100 Cc. of blood being allowed to flow from an incision in the vein peripheral to the point of injection.

Fifteen dogs, in which the transfusion was begun before the heart had ceased to pulsate lived. Five control-dogs, in which it was possible to secure return of cardiac and respiratory activity, died within two to four minutes after temporary resuscitation, while four other control-animals, injected intravenously with Ringer's dextrose-solution and epinephrin instead of the erythrocyte mixture, died within from three to five minutes.

Doctor Burmeister is convinced of the value of this method of resuscitation and advises the establishment of emergency stations where human erythrocytes are available for injection, just as pulmotor-stations are now maintained. In view of the large number of lives sacrificed every year through illuminating-gas asphyxia, the suggestion has much to commend it.

#### QUININE AS AN ANTISEPTIC IN BATTLE WOUNDS

Dr. Kenneth Taylor, of the American Ambulance at Neuilly, Paris, reports to *The British Medical Journal*, December 25, 1915 (p. 923), his experience with quinine-hydrochloride solution as a dressing for infected wounds. The advantages claimed for this alkaloidal salt are, that quinine hydrochloride has very high bactericidal properties *in vitro*, especially marked in the case of the bacillus aerogenes capsulatus (the cause of gas-gangrene), against which it is ten times more effective than carbolic acid. When used, it reduced the mortality from experimental gangrene in guinea-pigs, from 100 to 41 percent.

Furthermore, this quinine salt has a strong antiferment action *in vitro*, preventing the digestion of proteins, and the consequent production of a medium favorable for bacterial growth; also, its activity is not greatly

reduced in the presence of serum or pus; it is practically nonirritating when applied in effective concentration to exposed tissues; it is nontoxic when used in adequate dosage; its cost is not prohibitive; and it presents no difficulties of preparation and does not alter its composition on standing.

When used clinically, a 1-percent quinine-hydrochloride solution is used as a wet dressing or for instillation. In some 12 cases, it was used in a 1-10-percent solution (with the addition of 1-10 percent of hydrochloric acid or 1 percent of alcohol) as a continuous drip.

About 125 cases of infected wounds were treated in the American Ambulance with one of these solutions, the majority being fresh wounds, and the patients usually being received at the hospital within forty-eight hours after injury. Many of these patients were infected with the gas-bacillus, staphylococci, and streptococci, the usual flora of putrefactive bacteria being also present in all. About half of them had open fractures of long bones of the arms or legs. Doctor Taylor says that most of the cases treated with the quinine solution have run very favorable courses.

#### SCARLET-FEVER IN THE FRENCH ARMY

The Paris correspondent of *The Lancet* (Jan. 15, p. 149) writes that scarlet-fever is one of the infectious diseases that has claimed a considerable number of victims in France during the present campaign. Professor Chantemesse has laid before the French Academy of Medicine the excellent results obtained by the employment of methods based on those recommended by Milne. The throats of scarlet-fever patients were painted with a 10-percent carbolized oil, at 3-hour intervals, day and night for the first forty-eight hours, and then twice a day for another week. For children, the strength of the oil was reduced. At the same time, the whole body was rubbed with the eucalyptus-oil, as so strongly advised by Milne.

The eucalyptus-oil treatment has been referred to from time to time in CLINICAL MEDICINE. Employed in association with saturation with calcium sulphide, careful attention to the alimentary canal, and control of temperature by means of small doses of aconitine, properly guarded, this measure undoubtedly possesses many advantages.

By treating the throat with the carbolized oil, there is no doubt that the spread of the disease can be limited, since it is now generally

recognized that scarlet-fever is transmitted mainly by the secretions of the nose and throat.

#### "GERMAN" MEASLES

The horrors of war have been added to by another wordy controversy in English medical journals. Correspondents of *The Lancet* and of *The British Medical Journal* are urging the dropping of the specific term "German" in connection with measles, as a designation for rubella! However, one ingenious correspondent endeavors to justify the use of the adjective "German," by explaining that "germaine" is the word that properly should be used; the assumption being that German measles is "germaine to" ordinary measles. It is to laugh!

It has been a long time since anyone has contributed anything to CLINICAL MEDICINE "germaine" to German measles. Who will volunteer for the next step?

#### HEXAMETHYLENAMINE TREATMENT OF INFANTILE PARALYSIS

In his very fine paper upon infantile paralysis—a paper in which special attention is paid to the operation of tendon transplantation—R. Tunstall Taylor (*N. Y. Med. Jour.*, Jan. 29, p. 193) properly emphasizes the importance of early treatment of the febrile stage, in order to forestall or limit the later-occurring paralytic symptoms. Among other things, he advocates alkaline antiseptic sprays for the nose and pharynx; thorough elimination with calomel, castor-oil, and enemata; hot wet-packs, to stimulate the action of the skin; free drinking of water, to encourage urinary elimination; proctoclysis by means of the Murphy method, to promote the same end; cold compresses or ice-caps to the head; counterirritation over the spine with tincture of iodine or mustard; and, finally, the internal administration of hexamethylenamine in doses of 1 to 2 grains every two hours, for the first three days, as first recommended by Cushing and Crowe, of Baltimore. While the value of the latter remedy is somewhat questionable, there is sufficient evidence to warrant its routine use, although Fraser and Anderson seem to doubt its utility.

On theoretic grounds, hexamethylenamine should be serviceable if given at the initial stage of infantile paralysis. The difficulty is, to determine the nature of the disease sufficiently early, since the onset is sudden and its character rarely recognized until

paralysis is established. However, in doubtful cases, the drug should certainly be given a trial.

May we venture to suggest another remedy? We refer to calcium sulphide. Older readers of CLINICAL MEDICINE will remember the fine paper upon this subject contributed by Southwick to our June, 1913, issue, page 482. He used calcium sulphide both as a curative and a prophylactic agent, with most excellent results. When infantile paralysis is even feebly epidemic in a community, saturation with calcium sulphide, and possibly the conjoint use of hexamethylenamine in moderate doses, is certainly worthy of trial.

#### THE EFFECT OF THE PROLONGED USE OF PITUITARY EXTRACT

The only effect from the prolonged use of pituitary extract, taken by mouth, was found to be, J. H. Musser (*Nouv. Reméd.*; cf. *Ther. Monatsh.*, 1915, p. 219), to consist in a moderate influence upon the peripheral blood-vessels; this action persisting for a certain time after omission of the medication.

#### DEATHS FROM WILD ANIMALS AND SNAKES IN INDIA

We learn from a recent number of *The Lancet* (Jan. 15, p. 141) that 1745 persons were killed by wild animals in British India during the last year, this being an increase of 9 percent over the previous year. Tigers were responsible for the taking of 646 lives, one man-eater alone having caused 289 deaths in a single district.

The number of lives lost by snakebite amounted to 22,894, an increase of 1124 over the figures of the previous year. Here, the echis viper was the greatest source of danger, and special measures to exterminate this reptile have been adopted.

#### POSSIBLE EARLY SIGN OF LEUKEMIA:

In a case of severe pyemic infection, H. Pribram observed (*Deut. Arch. f. Klin. Med.*; cf. *Wien. Med. Woch.*, No. 9, col. 436), as a short transient feature, a blood-picture entirely like that exhibited in myeloid leukemia. It is conceivable, Pribram conjectures, that conditions of this kind represent the initial stages of a leukemia, when a predisposition to hemic disorders obtains. If so, this fact might prove of value in studying leukemia in its earliest stage.



# Miscellaneous Articles

## Current Comment By a Country Doctor

**THE Rising Sun of Surgery.**—The practitioner who can glance up and read upon his bit of "wall-paper"—by now getting a bit brown with age—that he is qualified to practice medicine in *all its branches*, including surgery, can no longer really consider himself a "surgeon," not unless he has specialized in that branch. Even if he has done quite a bit in that line of work, such as repairing traumas to the extent of saving divers lacerated digits and limbs and, perhaps, occasionally making an impromptu armed descent upon the abdomen—taking out, say, enough gut to make a fair-sized sausage, with a classic V-shaped accompaniment of mesentery, and then becoming tensely occupied with a Murphy button or, if one be not available, uniting ends with a Lambert suture—one no longer can consider himself a surgeon, in the present acceptance of the term.

The up-to-date surgeon has technical skill in anatomical and pathological manipulation that places him in a class all by himself. There is no "going right down to the peritoneum and then being mighty careful" in the today surgeon's work. This is admitted by said up-to-date surgeon himself, also cheerfully and admiringly by others. And not one word of criticism of the surgeon is here intended; not even the hackneyed howl anent supposedly needless surgery is here reiterated. However, with all admiration for the rising sun of transcendent surgical proficiency, a few predictions as to the future of surgery will be hazarded.

The coming world, I am convinced, will see curative and preventive medicine so developed that eventually there will be relatively little need of surgery, nor danger of a supposititious epidemic of fee-splitting (against which frightful evil this and other sovereign states are now protected by statutory enactment); and, with the disappearance of all but a few representatives of our profession, the surgeon will go first, next the internist, and, lastly, there will remain the Doctor of Preventive Medicine—doctor, ac-

cording to its original meaning—teacher. How?

Mankind soon will be wise enough to stop turning loose the mighty powers of nature in destruction; thus war will pass away.

The pursuits of peace will be rendered free from danger by safeguarding the machinery used in the coming era. Thus shall we eliminate the most fruitful sources of surgical necessity; then will follow "natural causes."

Man is going to breed out the necessity for orthopedic surgery by proper environment and education of the human animal. Lastly, education will largely do away with acquired disease, while the internist will recognize and cure in its incipency whatever remains. The wrong will be detected in its stage of mere local disturbance of metabolic equilibrium. In other words, because of the increased efficiency of the diagnostician and internist, disease will be nipped in the bud—immediate examination of the sick as well as prophylactic examination of the supposedly healthy being made at stated intervals. In fact, the latter already is a feature of preventive medicine attempted by various life-insurance organizations.

What about the exanthemata, cancer, and so on? Give preventive medicine a bit more chance and sufficient backing, by awakening society, and all these chronic ails will be chased to where Yellow Yohn and others have gone or are fast going.

**Phytolacca.** — Poke - root grows along hedges and in waste places throughout the United States, providing the soil be sufficiently rich for their sustenance. Quick-growing and conspicuous, as it is, nature evidently is trying to call attention to its exceeding usefulness to man as an agent alleviative of disease.

Someone has characterized phytolacca as "the vegetable iodide of potassium." With the growing disrepute of KI as a sort of alternative cure-all, and the simultaneous recognition of other, better combinations in

which to introduce into the human system, the useful halogen (calx iodata for one), this comparison is probably a slander on good old poke-root; although, indeed, ash analysis does show the high potassium content of about 4.2 percent.

Phytolacca (now conveniently available in the form of phytolaccoid) is possibly the most generally indicated of all drugs in disorders involving the lymphatic system. Given the hardened and enlarged glands, a pallid mucosa, often showing vivid redness and removal of epithelium in patches, the tongue, while not heavily coated, covered with glary mucilaginous-looking material—and the first thought in the meeting of specific indications will be, to the expert clinician, phytolaccoid. Sometimes, in acute conditions, calx iodata is properly exhibited in alternation with the concentrate.

The most emphatic call for phytolacca is in enlarged cervical and mammary glands, when the use of this drug by inunction will, at times, work almost those "wonders" we so often see written about. Incorporation of the drug with lanolin insures its being carried in, while the required gentle massage accompanying it is not without certain merit. Help from this source can often be obtained in the treatment of early-stage buboes, regardless of their specific origin.

It must always be remembered that the specific action of phytolaccoid is exerted in aiding the lymphatic system and that, especially in chronic diseases showing glandular manifestations, agents calculated to augment leucocytosis and end-product elimination (such as echinacea and irisoid or other drugs of choice), are emphatically called for. Briefly, the phytolacca-thought is always connected with overtaxed glands, whether in acute or chronic conditions. This is a remedy of clear indications, but, like others, will fall into immediate disrepute with any user who expects it to reach beyond those specific signs.

Even in the treatment of glands that have become permanently enlarged, whether of classic neoplastic character or not, many observers claim splendid results. Other glands will certainly be aided, at least in doing the excess work thrown upon them, and the worth of the drug as a remedial adjunct in those forms of goiter not having excessive hypertrophied interstitial tissue is attested by many. A place, in connection with dietetic régime and proper exercise, is also legitimately to be accorded to phytolaccoid in the treatment of obesity.

Phytolacca is rather slow of elimination so that a reasonable degree of caution against cumulative effect—causing delayed emesis and, according to some authorities a depressant effect upon the heart's action—is to be looked out for. However, the reasonable dose is perfectly safe, care being taken to give the remedy at sufficiently long intervals to avoid cumulative effect. It is the writer's custom to prescribe phytolacca, in chronic conditions, three times a day or every three hours. In acute diseases, it may be pushed to effect, giving by mouth, and also in conjunction with inunction over and around the involved glands.

*The "Fra's" Last Wish.*—The wills of Elbert Hubbard and of his wife both requested that their bodies be cremated. Disposition of the organic remains of this brilliant exponent of individualism and the consummate master of rhetoric became, owing to the exigencies of marine warfare, a matter for piscatorial consideration; still, the making public of his desire will aid the cause of the believers in hygienic and rational disposition of the dead.

Knowing the laws of physics and chemistry, even to the extent that we do, it is difficult to take an affirmative side in the argument against cremation of the dead as a duty to the living. Why argue in favor of slow disintegration of organic matter, when it has ceased to be actuated by the unknown force of personality, and when this change can be quickly made without soil pollution and danger to the living?

We take it that there is no justifiable religious ground for letting putrefaction destroy man's body: if there is, we can as well turn to the complicated discussion of the Zend-Avesta teachings at the time of the corruption of Zoroastrian precepts by magian influence—at which time a line of sophistry was worked out that resulted in Parsee substitution of buzzards and jackals for fire. The only arguments against cremation, other than those based upon precedent and illogical race custom (aside from purely religious dogma) that now come to our mind, hinge upon the difficulties to be placed in the way of future ethnologists and present-day medical students by destroying material for research. The danger of mistakenly using the ashes of one's deceased spouse for tooth-powder, as related by a recent fiction writer, is purely imaginary.

Personally, it makes little difference to us what happens finally to our body. Certainly, none of us can say. There are in existence

the former transitory habitations of rulers of the shepard-king dynasty that are being studied by archeologists and gazed at by gaping tourists. The skulls of the once mighty are measured by the student of comparative zoology; and it may have happened to the skeleton of some nameless Pharaoh, sepulchred under enough rocks to prevent coyotes from performing the perverted Zoroastrian rights of the Parsee, that a pair of medical students, instead of holding a soliloquy over its cranium, as was done by the tragedy-marked Prince of Denmark over Yorick's, got very busy in trying to locate where within had been the fissure of Rolando—thus utilizing the departed in connection with Gray's "Anatomy," to make up what are now called units, while they were spending their vacation in earning a few needed dollars by desert toil.

It may be that these students were greatly aided in their arduous search for knowledge by the custom of gathering as many rocks as were conveniently available, and time permitted, piling them over a shallow grave, then leaving, after erection of such cross, if any, as available material permitted, the duty to the passerby of crossing himself and adding one more stone to the desolate heap, in certainty of its being done.

Sometimes these students may have speculated as to whether that desert dead had been hero, horse thief or just plain searcher for free-milling ore. For the truth of the story I vouch not and claim not to know a landmark or water-hole from the Spanish Peaks to the mouth of the Yaqui River, and doubtless should take a gila monster on a mesquite-bush for a 108 Bar maverick; but, if true, it is quite possible that the bones, after serving to demonstrate tubercle and foramen, were, not without sentiment, returned to their resting-place to await further disintegration. If this was done, it is to be hoped that the desert dead was reasonable enough not to object to the little matter of lending his bones. If the gentleman was a bandit chief, perhaps he was even glad to offset some of his cussedness in life by promoting knowledge, to aid toward lessening human suffering.

*Alcohol and Active-Principle Medication.*—Qualified to speak either from the standpoint of physician or pharmacist, I should not have voted for exclusion of spiritus frumenti nor of spiritus vini gallici from the revised U. S. P. These articles still have a limited field of usefulness and are employed by many capable men. Any medicinal substance of recognized use should have a standard of purity; espe-

cially is this true of whisky, which requires an aging process that permits the interaction of certain aldehydic components with the higher fusel-oil alcohols, to form esters essential to the formation of a product suitable for consumption.

However, the use of alcohol in any form in medicine is constantly diminishing. I have no remembrance of having prescribed whisky, brandy or wine for a half-dozen years—and I am not ranked as a prohibitionist, either. The fact simply is, that, having other agents to accomplish the same therapeutic result, it seems illogical to load a diseased system with a substance in quantity that must be oxidized—burned up—at the expense of energy more properly to be conserved. Think of the divers complicated processes that must be undertaken to change  $C_2H_5 OH$  to end-products of elimination, at the same time maintaining proper balance of reaction in the body-fluids. The primary stimulating effect (always subject to the law of reaction) is by shock activity, set up through an effort to throw off an irritating molecular combination; and such stimulation can be obtained by other means.

The tendency of modern practice is, to minimize even the amount of alcohol used as a solvent and preservative in the menstrua employed. Use of the active principles has in no small way contributed to the gradual, but certain, decline of the prescribing of alcohol in medicine. The trend toward the use of the indicated remedy in the smallest and most potent available bulk has, perhaps unconsciously, helped much toward the possible final cutting down of the use of alcohol to the sterilizing of the hypodermic syringe. Even for this purpose, however, it should be used carefully. When employing an alcohol-sterilized syringe, be sure to rinse out the instrument with sterilized water before employing it for administration of the animal products put up with physiologic salt solution, *especially when giving pituitin*.

As a beverage, alcohol is simply being pushed out. It is considered a lessening factor in modern efficiency and as a social institution is looked upon with increasing disfavor. The change in the public opinion anent drinking by the doctor has been so marked in the past very few years that he had best not even drink the new baby's health, after sitting up all night awaiting its arrival. It just will not do as a business proposition, regardless of the possible belief of the physician himself that he can oxidize a bit of booze without harm or even with

direct benefit. Potation is simply a thing of the past, and any benefits to be derived by returning to beliefs of the past are, if any, so negligible as to be unworthy the effort toward replacing Old Man Booze in his former good standing. The old man had a long vogue, extending from fermented cocanut-juice to champagne and blind-tiger corn-trouble potentiality, but his day is about done. This statement is not made by a prohibitionist, if you please, but by an observer of evolutionary progress, one who has never believed in forced prohibition propaganda, so often conducted at the expense of the general issue of educational human progress.

A. L. NOURSE.

Sawyer ville, Ala.

#### ANOTHER HARRISON LAW PROBLEM

Mr. A. B. is a user of morphine. For some thoracic trouble he had several ribs resected on the right side, and has to wear a drainage tube all the time. He is also tuberculous.

He went to two different places for treatment and they tried to cure him of the addiction, but he could not stand the treatment. They gave it up and sent him home, telling him he would have to use a certain amount of morphine, and he is now using 1 1-2 to 2 grains, 3 times daily. When he cuts it down to 2 grains a day his cough starts up and exhausts him. He always calls on me to treat him, and what I want to know is whether I can furnish him the amount of morphine he requires with directions how to take it.

"H."

Indiana.

[Frankly, doctor, I don't know. This whole question is now traversing the dangerous passage between the Scylla of official interpretation on the one hand and the Charybdis of judicial decision on the other. As we understand Treasury Decision 2200, the physician must not prescribe (or presumably dispense) the narcotic drugs "in a quantity more than is apparently necessary to meet the immediate needs of a patient in the ordinary case," the only exceptions being that the physician supplying an addict with an opiate must show "decreasing dosage or reduction of quantity prescribed from time to time," while if the patient is suffering from a chronic or incurable disease, "prescriptions might show an ascending dosage or increased quantity." In which class would you place this patient?

On the other hand, Judge McCall, of the United States District Court, Western District of Tennessee, has ruled (case of United States vs. Friedman) that "there is no limit fixed to the amount of said drugs that a physician may prescribe, nor is there any duty imposed upon him, other than to keep a record of all such drugs dispensed by him, and the name and address of the patient, except those to whom he may personally administer, and that he must preserve the records for a period of two years." This decision may be reviewed by the United States Supreme Court. We have not heard whether it has been appealed or not—but the Government usually appeals when it loses.

Our advice to the doctor would be to supply this patient with (or prescribe for him) the smallest amount of narcotic possible, and make a strenuous effort to cure him. Have another physician see him with you, in consultation, and between you decide on the course best for the man, then follow it faithfully. Keep your records scrupulously, entering in your Record Book the exact reasons why the opiate was provided in any unusually large dosage. Under no circumstances permit yourself to be classed as a "purveyor" of a narcotic for an improper purpose, and never give the opiate to any third party, or intermediary. Finally, do your very best to follow the Commissioner's rulings strictly and to the letter—but be human and humane.—Ed.]

#### HARDSHIPS THE HARRISON LAW MAY BRING

We, here in Michigan, have just received our first visit from the inspector under the Harrison antinarcotic law. No one seemed to understand exactly what to do and what not to do so as to comply with the law as officially interpreted; however, according to the explanations given out by this inspector at these visits, it becomes manifest that every physician is at his mercy—and more so, probably in the rural districts than in the cities. Let me briefly repeat a few of the rulings as explained to us:

Supposing a physician is traveling or is driving out in the country and he is taken sick with cholera morbus, maybe in the middle of the night, while for some reason no other physician can be reached, and under these circumstances this sick doctor should dispense for himself an opiate. In doing this he is violating the law.

Or, if under similar conditions this doctor's horse becomes sick and he knows that an

opiate or some other narcotic will give relief, at least until he can reach home or some place where he can call help, if he gives the drug he violates the law.

Likewise, if he should meet a patron or neighbor on the road stalled with a sick horse, and he provides a narcotic for temporary relief he again violates the law. He may be in a locality where there is no veterinarian within ten miles or more.

I have been practicing medicine since 1871, and it seems strange that physicians should be treated like this, with no honorable standing, and placed at the mercy of an inspector who may be a good sensible man, but also, who may be one who is determined upon hewing straight to the line of the letter of the law, irrespective of sense or justice. He may be swayed by politics or his opinion of different schools may influence him; even personal prejudice may control. Such a law gives such men a splendid opportunity, if they be so inclined, to make a world of trouble.

We who dispense drugs must account for all narcotic drugs. If you should meet with some accident and happen to break any of your narcotic bottles in your case, will the inspector accept your explanation or will he report so much of your stock not accounted for? *You do not know.* A bottle of anesthetic stood on my desk. I was preparing to use some of the anesthetic, when a playful kitten jumped on the case and brushed the bottle off, spilling the entire contents. What will the inspector report?

I appeal to you, readers of CLINICAL MEDICINE, to come forward and point out a way of relief. I realize that the law is good in a great many respects; but, cannot the objectionable features be removed? Someone must be trusted and considered honorable, and do you not think that physicians, as a class, are honorable men? Much more can be said about the great wrongs this law can inflict upon us, as well as upon the sick, but I think I have said enough to show you the points I wish to make. I am hoping you can give us some light.

"R."

Michigan.

[The possibilities of prosecution, or persecution, under the Harrison law presented by our Michigan brother are correctly stated. It is perfectly true that it is illegal for a physician to prescribe or dispense a narcotic drug for himself, even in case of emergency; and he can not legally give such a drug to a sick animal or supply it to a layman for that

purpose, no matter how remote he may be from a registered veterinarian. The writer has a relative who, with his family, is taking up a claim in the woods of northern Minnesota. In case of sickness he is compelled to go or send over thirty miles to a physician—and he has two or three hundred neighbors in the same predicament. Heretofore I have supplied this family with simple remedies for coughs, diarrhea, neuralgia, painful injuries, and other emergencies, but now I may not do this, both because the federal narcotic law forbids and because "poisons" are now ruled to be unmailable by the postmaster general, and also because it is illegal for them to have these pain relievers in their possession.

Of course it is not likely that the officers of the government will make any trouble for a doctor who is going about his business in a proper way. Indeed, Dr. Henry B. Hemenway, who recently rendered a report on the federal narcotic law to the Council of the Chicago Medical Society, stated that he had been assured by those in charge of the enforcement of the law in this city, that they would not make trouble for any reputable physician, their sole aim being to reach the quacks and the crooks. But in a sense that only makes the situation more serious, for it is an admission that it is illegal for a physician to do something that is admitted to be morally right—indeed, a duty; that there is one kind of law for one class of men and another kind for another class; that practically all physicians have been transferred technically to the lawbreaking class; that their transgression may be and will be winked at, if they are in good standing; and that the profession, almost as a whole, is at the mercy of the opinions, whims, personal grudges or prejudices of the secret agents of the government. And this reminds me of a statement I recently heard made, anent the rapidly growing system of government supervision over the lives, habits, and business of our people, that "if all the laws were enforced half of us would be in jail and the rest of us out on bail!"

We believe in the Harrison narcotic law; but we do not believe in extending its application to such a point as to make it inquisitorial, tyrannous, and inhumane. It is tending strongly toward that extreme, if we are to accept the interpretations placed upon it as final. But must they be final? In our opinion the result rests largely with the medical profession. Read the two other letters upon this law which we are printing



in this issue, and then tell us what *you* think should be done.—Ed.]

#### THE TREATMENT OF NARCOTIC ADDICTS—WITHOUT VIOLATING THE LAW

I would appreciate your opinion regarding prescriptions for narcotic drugs given by a country physician. As you well know, the older country physicians used too much morphine for the relief of pain, resulting in the creation of many addicts among the older people. Many have taken the drug for long periods and are still able to get prescriptions from nearly any physician whenever they please. Our physicians have known them for many years and try to induce them to take treatment to effect a cure. Some try, but without avail.

Many of these patients are not in good health, and are also poor, and there are no free institutions in this vicinity to my knowledge. I keep reducing the dose when able, and I think we are all anxious to obey the meaning of the Harrison law, not only on account of the penalty of the law, but for the good of the law and because we appreciate its good intention.

I hope you may be able to offer some suggestions. Must we reduce the dose to keep within the law?

"B"

New Hampshire.

[Inasmuch as our New Hampshire friend's predicament is identical with that experienced by many other physicians—as we know because we have received many letters covering exactly this ground—we endeavored to secure from the Commissioner of Internal Revenue, at Washington, an opinion as to the course to be adopted by physicians called upon to care for narcotic addicts. We accordingly wrote the Commissioner the following letter:

I am enclosing herewith copy of a letter just received from a New Hampshire doctor. I am omitting his name, because presumably the letter was written to me in confidence. However, this is one of quite a number of letters received from men who are experiencing exactly the same difficulty referred to in this communication.

In other words, it is practically impossible in a very large percentage of instances, especially in country practice and particularly among the poor who are compelled to make a living, to show a "decreasing dosage or reduction of the quantity prescribed from time to time" in treating narcotic addicts, as required by T. D. 2200.

For the benefit of the medical profession, some twenty-five thousand of whom we reach through

CLINICAL MEDICINE, I shall appreciate it very much if you will tell me what I shall tell these men.

We received the following reply from the Commissioner's office:

Replying to your letter of January 17th, enclosing a copy of a communication received from a physician enquiring as to the quantity of narcotic drug that may be dispensed or prescribed to patients who are addicted to their use and who live in the country, you are advised that Treasury Decision No. 2200 to which you refer indicates what is expected by the Government; to show the good faith of physicians in disposing of narcotic drugs through prescription or otherwise. As it is practically impossible to effect a cure by placing in the hands of a drug addict an unlimited supply of narcotics, unless a physician reduces the dosage in successive prescriptions, the intents and purposes of the Harrison Narcotic Law would be violated.

There is enclosed for your information a copy of an opinion rendered by a United States District Judge which very accurately defines what is expected of physicians registered under this law.

Respectfully,

L. L. SPEER,  
Deputy Commissioner.

The pamphlet sent us by Mr. Speer was a copy of the decision of Judge Sater of the District Court of the United States, Southern District of Ohio, Eastern Division, in the case of Tucker and Robinson vs. Williamson, Collector of Internal Revenue. This decision has to do with the business of two physicians (Tucker and Robinson), licensed as such under the law, who were engaged in the manufacture and mail-order sale of a well-known remedy for the treatment of catarrh, containing a small amount of cocaine, to-wit, Tucker's Catarrh Cure. The whole argument deals with the legitimacy or illegitimacy of mail-order practice, and so far as we can discover, from a careful perusal, it seems to interest the general practitioner only in so far as it deals with the problem of "personal attendance," as defined in the Harrison Narcotic Law. We confess that we are unable to see the slightest analogy between the case of these vendors of a cocaine-containing catarrh remedy, sold to the laity, and that of our New Hampshire friend and the hundreds of other legitimate practitioners who are in a quandary as to what they shall do when called upon to supply the actual needs of unfortunate people who are victims of a narcotic addiction.

We do not wish to be placed in the attitude of criticising Mr. Speer unduly, knowing the difficulties of the position which he holds, but I am sure that any physician who reads Mr. Speer's letter, especially that portion of it referring to the "placing in the hands of a drug addict an unlimited supply of narcotics, unless a physician reduces the dosage in suc-

cessive prescriptions," will agree with the writer that Mr. Speer knows very little about drug addicts and still less about the practice of medicine. Personally, the writer has never met a physician who even suggested, much less advised, the desirability of placing in the hands of a drug addict "an unlimited supply of narcotics."

What doctors want to know is how to provide legitimately for the actual needs of these poor people. They are not criminals, they are not infectious, and they can rarely be cured off hand, by reducing the dosage of the narcotics "in successive prescriptions." In spite of Mr. Speer's letter, we are still seeking light.

In this connection we advise a careful reading of the comment upon the preceding letter, which really deals with the same problem, although from another angle.—Ed.]

#### IT'S ONLY THE GRIP

Anent Dr. Musgrove's comments on "two kinds of colds," in the January *CLINICAL MEDICINE*, p. 69, Tyson, in his "Practice of Medicine," p. 132, says: "In the epidemic (of grip) of 1893-94, gastric catarrh was frequent, producing nausea and vomiting, and adding greatly to the physical weakness. Severe vomiting may even usher in the attack."

This is in keeping with the instruction given by Doctor Sloan, of Kansas City, who classifies grip under three headings: (1) Catarrhal—respiratory tract; (2) nervous—afflicting any portion of the nervous system; and (3) alimentary.

For a number of years in practice I saw only the first and second classes, and was beginning to doubt there being a third; but the last two or three years, and especially during the present epidemic, I have been thoroughly converted, having seen the "alimentary" form with all its variations.

I have seen so many cases of sore, swollen liver and gallbladder, almost invariably accompanied by slight jaundice, that I can scarcely believe it a coincidence. These cases are usually secondary to or a sequel of the catarrhal form.

I have also seen a number of cases of heart involvement as a sequel, including palpitation, irregularities, and even distinct murmurs, which I can trace directly to an attack of grip, probably as a toxic result.

If people realized the seriousness of this disease, and would consult a physician at once, and follow instructions implicitly, they would escape these end-results, which

are usually out of all proportion to the original trouble.

As dominant treatment, nothing has given me as much satisfaction in the catarrhal forms as calx iodata and calcium sulphide; and I should not consider it malpractice to use these two remedies all through all acute forms.

L. J. COBERLY.

Oakesdale, Wash.

[The alimentary type of grip has been known for many years and has frequently been described. That there is such a disease, clinically speaking, is admitted by everyone. The only open question is as to whether this disease is a true influenza—that is caused by the influenza bacillus—or not. Now that these winter ailments are receiving close bacteriologic study we are learning some strange things. For instance, A. J. Hinkelmann, in an article on "The Bacteriology of the So-Called Intestinal Influenza," (*Illinois Medical Journal*, Nov. 1915) showed that in one epidemic of this disease presenting the typical symptoms, the stools of the patients were well filled with the bacillus of winter cholera, which cultural and animal experiments seemed to show was the cause of the disease in this instance. Whether this microorganism always causes the alimentary type of influenza or not, of course we cannot say. Time will doubtless tell.

One of the most interesting features of the grip epidemic of this winter is the comparatively small part played by the influenza bacillus in its production. In the middle west this organism was certainly a minor factor, but it seems to have had more of an influence in the East—in New York, for instance. Generally speaking, the pneumococci and streptococci have had the stellar roles this season, and this explains the severity of the type and the exceptionally high mortality. The streptococci are probably responsible for the numerous instances of cardiac involvement.

As to treatment, Doctor Coberly strikes the proper note—although we advise resort to bacterin treatment as adjuvant to drug treatment. Given early, a pneumococcus-streptococcus bacterin will modify the course of the disease very decidedly.—Ed.]

#### OBSTETRICAL AIDS

I use H-M-C and pituitrin in every case of obstetrics. If I see the patient early and she

is having an excruciatingly painful dilation of the cervix I give a tablet of the combination by mouth, when usually in a few hours the cervix will be well dilated. Then I give a tablet of H-M-C No. 2 and 1 Cc. of pituitrin together, hypodermically, and in about twenty or thirty minutes, and many times earlier, it is all over with, and just a little whiff of chloroform as the head sweeps the perineum, labor is completed from one end to the other, with little pain comparatively, and the mother goes to sleep and sleeps for several hours.

A bit of advice: To keep a gentle horse from running away, I give a teaspoonful of fluid extract of ergot after the placenta, as pituitrin action does not persist very long.

I. R. FOWLER.

Louisville, Ky.

#### ARE YOU LOOKING FOR A LOCATION?

Dr. U. G. Vance, La Fontaine, Indiana, writes that he knows of locations for three or four good physicians. If you are interested, write the doctor; be sure, however, to enclose a stamped self-addressed envelope for reply.

#### MEDICAL SOCIETY OF THE MISSOURI VALLEY

The twenty-eighth semiannual meeting of the Medical Society of the Missouri Valley will be held in St. Joseph, Missouri, Thursday and Friday, March 23 and 24. The scientific program will include some twenty-five papers, besides two public orations to be given by men prominent in the profession.

It is believed that this meeting will prove a very attractive one, and a cordial invitation is extended to all physicians residing in nearby states. The March number of *The Medical Herald* will present the full program. If you are interested, write to Dr. Charles Wood Fassett, St. Joseph, Missouri, who is the secretary of the society.

#### DRUGS AND DRUG-ACTION

I have just been reading the very thoughtful and suggestive editorials in the January number of your excellent journal. How is it possible that you can think out so many good things? You know that I myself once edited a medical journal, but never could I have made a tenth of the pregnant suggestions such as you present month after month. Just now, though, I wish to single out the

article titled "Cardiac Stimulants," which is capital; but so is that on lobelia and its alkaloids.

Both of these articles (as well as many other papers published), all of which show an exhaustive study of drug-action, recall an article, which I wrote nearly twenty years ago, on "the primary and secondary action of drugs," in which I proved that all the drugs that had been carefully studied seem to be capable of exerting opposite actions, according as the dose is large or small. I began by citing this generalization from Stillé's great work, his "Therapeutics and Materia Medica," as follows: "There is also a primary and a secondary operation of medicines; sometimes the one and sometimes the other is curative." Then I drew largely from H. C. Wood's copious material, and finally quoted from Lauder Brunton's elaborate work on pharmacology this pertinent statement: "This opposite action of large and small doses seems to be the basis of truth on which the doctrine of homeopathy is founded;" after which he proceeded to expose some of the fallacies of that system.

Dr. Samuel G. Dixon, the celebrated director of health affairs in Pennsylvania, was temporarily in Atlantic City with his family and one of his children was under my care at the time that article of mine was written. I asked his judgment about publishing it, and he insisted that I send it to Lauder Brunton, in London, for *The Practitioner*, together with a personal letter from him. I did so, and the paper appeared in the April and May numbers of 1888.

Now that the profession is broader and more liberal, so that it is no longer a crime to meet a homeopathic brother in consultation, why should it not be right and entirely allowable for all of us to prescribe the smallest doses that have been shown clearly to be effective? The faults and limitations of the homeopathic system are known to all of us, but sometimes those men effect cures after we have failed; and this fact should set us to thinking. I early discovered, as Ringer also has insisted, that drop-doses of the wine of ipecac are often effective in relieving nausea, and that similar doses of tincture of cimicifuga will frequently prevent threatened abortion. In or near Philadelphia, there is living a young lady today (or was at last accounts), notwithstanding that, when her mother was pregnant with her, the latter was ordered by an experienced physician of Atlantic City to take a drug for the purpose of terminating the pregnancy, because

she had been suffering for several days from pain and uterine bleeding, and, besides, had had a like experience three or four times in previous pregnancies and efforts to prevent an abortion had failed. And her medical adviser had the support, too, of the leading authorities in obstetrics. Nevertheless, when I was consulted, I advised that before doing this she try my plan. I directed that she remain strictly at rest, and prescribed for her tincture of cimicifuga, which I knew had proved helpful in several such cases. She obeyed, and she went to term.

Your missionary work for minute doses of the numerous valuable alkaloids has enabled us to avail ourselves of them and thus save thousands with their help; and, has yet, left us free to rescue other thousands, in what would otherwise have been fatal emergencies, by injecting full stimulating doses of heart stimulants or tonics, and the hemostatics or appropriate vaccines.

BOARDMAN REED.

Alhambra, Calif.

[Praise from Boardman Reed is praise indeed.—Ed.]

#### SOME POINTERS LEARNED DURING TWENTY YEARS OF PRACTICE

When a little powdered iodoform is placed upon the root of the patient's tongue and there allowed to dissolve slowly, it will relieve the worst attack of difficult (asthmatic) breathing, irrespective of the cause of the disease. The relief occurs in a very short time, generally within five to fifteen minutes, and will last from one to six hours, when the medication may be repeated. In one instance, the relief was found to be not as marked as usual, but here the asthma was due to a serious organic heart lesion from which the patient died two days later.

For a calomel cleanout, give from 2 to 5 grains in 6 to 8 divided doses, tablets or granules, every third day, late in the evening, following with a full dose of sulphate of magnesium early next morning. During the intervening days, a saline laxative should be given in full medicinal doses night and morning. This course will cure sciatic neuralgia when many other plans have failed. In one case, I had used all the famed remedies—salicylates, blisters, electricity, rhus, and many others—over a period of two months. The plan described cured in less than ten days.

In diphtheria, especially in severe cases and while one is waiting for antitoxin to

arrive, give pilocarpine hydrochloride. I saw mention of this in *American Medicine* many years ago and I used it very successfully before the antitoxin came into use. The pilocarpine should be given hypodermically in doses ranging from 1-48 to 1-24 grain, according to the age of the patient and severity of the attack, repeating every ten or twelve hours, unless the symptoms abate. Of course, one must not neglect antiseptic local treatment, to stop absorption of toxins from this source.

In this connection, I want to call attention to the value of gelsemium as a remedy for paralysis, either local or general, following diphtheria. A reliable preparation of the drug should be secured. Gelseminine hydrobromide, 1-250 grain, given every two hours, for a child 6 or 8 years old, will meet the indications.

To relieve neuralgic pains in any part of the body, as well as pains due to various causes, try the local use of guaiacol. For facial neuralgia, rub in 5 to 10 drops over the site of the pain; you will be surprised to see how quickly it disappears. The same drug will often remove muscular pains of a rheumatic nature. In fact, I believe that, provided any given pain can be relieved by local applications, guaiacol will do this, no matter what the cause. I have used it with good effect in toothache and earache, applying it to side of face and the temple. Pain and tenderness over the area of the ovaries can be relieved in the same way.

To render black hairs on a woman's face translucent and, thus, less noticeable, they should be treated with peroxide of hydrogen. The solution should be diluted with an equal volume of water when beginning the treatment and then the strength gradually increased as the treatment proceeds. You often meet young ladies whose upper lips are covered with fine dark hair which makes them rather conspicuous and causes them much worry. It would almost be an impossibility to remove these hairs by means of electrolysis, and this should not be thought of when the foregoing simple treatment can be applied. The remedy should be used freely and often. This remedy exerts a retarding influence upon the growth of these superfluous hairs, and many of them fall out if it is applied perseveringly.

To abort or to break up a cold, I know of no remedy so valuable as potassium dichromate. It is well borne by the aged and weak persons. It may be administered at any stage of the attack and will demonstrate

its curative powers. When fever is present give aconitine in conjunction with it, each seemingly enhancing the action of the other. Potassium dichromate is especially indicated in grip and tonsillitis, when the throat and tonsils appear raw and angry. The same is true for croup and capillary bronchitis. In treating a cold or grip, if the remedy is pushed and other essential things are done—not neglecting the “clean-up”—you will not have to wrestle with prolonged prostration or drawn-out recovery.

About one year ago, I accidentally discovered that sulphide of calcium acts very decidedly as an anaphrodisiac. It was being administered to a young man who was suffering from pustular acne. He was also suffering from a rundown condition, which he said was due to frequent nightly emissions. It was not long before his condition was very much improved. One day I mentioned that his general condition had improved also, and he said it was no wonder, for he had not had a bad dream for weeks. From this time I began to prescribe it for this and allied conditions, and my notes show that every patient was benefited. The calcium sulphide subdues the erotic craving, and also weakens the erectile power, and, therefore, is beneficial in chordee when associated with gonorrhea, and is especially beneficial for boys who masturbate. How this therapeutic effect is brought about, I do not attempt to conjecture, because the drug is certainly an alterative and tonic, and patients are built up under its influence.

While I am speaking of calcium sulphide, I want to call attention to its value in dysentery, especially when combined with Dover's powder. Ordinarily 1 grain of the sulphide should be combined with 4 grains of Dover's powder for one dose. This amount should be given every three hours until the blood and mucus begin to disappear rapidly from the dejecta and the straining is greatly relieved; then give a dose three or four times a day, as indicated.

The foregoing combination is good treatment in all forms of gastroenteric troubles where looseness of the bowels and pain are prominent symptoms. Patients so treated not only recover rapidly, but complications are comparatively rare.

Here are some indications for ergot other than those in which it is generally prescribed. According to my experience, we have in the drug one of our best tonics for the entire arterial and capillary system, in all passive or sluggish conditions. It should always be combined with the indicated heart tonic in

the very beginning of those diseases that engorge the circulation.

The indication for ergot is exactly opposite to that for the use of the bromides. The latter are indicated where there are a fast circulation, excitement, and an excess of nervous energy; patients are restless, talkative, and can not keep quiet. In the condition calling for ergot, the patient may suffer, but is benumbed and overcome. The circulatory system is deranged, the portal circulation is overcrowded, the organs become more and more crowded with blood (which is poorly oxygenated), their functions are more and more deranged, until the whole system is suffering from autotoxemia; and a tedious convalescence is the result.

Ergot will be found a remedy of precision in capillary bronchitis, pneumonia, malaria, grip, continued fevers, congestion of the pelvic organs, and in all conditions with the above indications. Small doses of ergot will also relieve the headache of flabby-tissued persons. The brain is congested in many of the diseased conditions enumerated above, and ergot restores the arterial tone there as well as elsewhere. Under the influence of ergot, the cells of that organ are no longer inundated and paralyzed by excess of blood: the circulation being restored, the brain is able to shake off lethargy and torpor, and can then assume command of the body-forces.

C. W. CANAN.

Orkney Springs, Va.

#### BLOODY DIARRHEA AND TYPHOID FEVER

Case 1. A woman past 50 years had been constipated from youth until after she was 25 years of age, when periodical diarrhea came on, which continued for fifteen years. Every one to three weeks a profuse diarrhea would set in and continue for several days, whatever the treatment; the passages consisting of a profuse yellowish liquid. Ten years ago, she fell into my hands, and I placed her on an antiseptic and tonic course, whereupon the spells were greatly lessened and her general health improved, until after the climacteric three or four years ago, when they again became worse—more frequent and bloody, even fresh blood (about an ounce) at times being voided after stools.

Last fall—September 25 to 28—I gave her three hypodermic injections of emetine hydrochloride and she has not passed any blood since. However, on November 2, she had a serious attack of watery diarrhea,



followed by cramps in the legs and arms so severe that I had to give her H-M-C and strychnine injections to control them. There occurred a large number of passages of watery feces—but not any blood—something that had not happened before for years. Here certainly there was a pronounced victory for emetine in preventing bleeding. This is not dysentery, but ulceration of the colon.

Case 2. A boy 15 years of age was taken with typhoid fever on September 29, his temperature continuing to range between 103° and 104° F. until the 26th of October, when it gradually fell, until til the 16th of November, when it reached 97 degrees. The morning and evening temperature seldom varied more than 1 degree. A positive Widal reaction was secured on October 10. This was the most uniform, highest and longest persisting temperature I ever saw.

The patient had a clean tongue and flat belly the whole time. He was deaf during most of October and November; he was delirious and picked the bed clothes for a week, from November 15 to 23, but recovered under a course of the sulphocarbolates and echinacea. I have found that echinacea will prevent a dry, cracked, sordes-covered tongue. Get that last idea before your readers.

THOS. W. MUSGROVE,

Sultan, Wash.

[Thanks for "that last idea," doctor, and for all the suggestions contained in your letter.—ED.]

#### EMETINE IN EPISTAXIS

At 11 a. m. December 11, last, I was called to see Mrs. Wesley, colored, age 76. She had bled profusely, but the hemorrhage had ceased before my arrival. Was called again at 9:30 p. m. the same day, and the hemorrhage was so free that I plugged the anterior nares; which checked it at once. I then gave 1 grain of emetine, hypodermically. No more hemorrhage occurred until December 12, at 8 p. m. I then gave another similar dose of emetine. The patient was icy cold and the arterial circulation very feeble, so, I combined 1-4 grain of morphine sulphate and 1-150 grain of atropine sulphate with the emetine, giving all at one dose (hypodermically). This treatment, or nature or something else checked the hemorrhage, after I had plugged the anterior and posterior nares. I then put the patient on 1-100-grain doses of atropine sulphate, internally, every three

hours, and by 7:30 p. m. there had been no return of the hemorrhage.

This report is incomplete and of no value, but I reported it to the Mississippi County Medical Society on December 13, and they suggested adrenalin locally, together with packing the entire nares with gauze, bismuth subnitrate to be incorporated into the gauze.

Packing the posterior nares (with poor light and ignorant assistants) is not the funniest thing I ever did, especially if you are satisfied that a funeral is at hand if you do not hurry up.

In a long series of mean cases, I do not know of anything more trying than watching a patient's life go out through hemorrhage. Fortunately, I have not met this kind of case. Luckily, or by some providential intervention, my cases of hemorrhage have never succumbed (to hemorrhage alone), and only one case through traumatism, incident to forceps delivery. I reported this latter case and was ripped up the back by critics.

Describing the best way to check hemorrhage from the nose, uterus, and lungs would help some poor doctor out of a peck of trouble, especially if given correctly by someone who knows how. (Don't all write at once!)

W. P. HOWLE.

Charleston, Mo.

#### EMETINE IN HEMOPTYSIS IN CHEST WOUNDS

*The New York Medical Journal* gives an excellent abstract of an article by Dupont and Troisier in *Bulletins et memoires de la Societe medicale des hopitaux de Paris*, November 27, 1914, who report three cases of penetrating rifle-bullet wounds of the thorax, followed by hemoptysis, in which emetine was used with results apparently as satisfactory as those already reported by other observers when this drug was used in the treatment of tuberculous pulmonary hemorrhage.

In the first case, with a wound at the base of the left lung, arterial blood was being abundantly expectorated upon admission, and the man was dyspneic and oppressed, and presented signs of a slight hemothorax. The condition persisting throughout the night in spite of the dressing applied, a subcutaneous injection of 2-3 grain of emetine hydrochloride was given. In the afternoon the bloody expectoration showed marked reduction, and in the succeeding night ceased almost completely. A week later, the patient was discharged in excellent condition.

In a second similar case, a single injection

of emetine was also followed in a few hours by cessation of bloody expectoration.

In the third case, that of a man wounded a week before, bloody expectoration had been continuous, and auscultation revealed a tendency to consolidation of the lower portions of the lungs, with crepitant rales. After an initial injection, the bloody sputa were reduced from fifty a day to ten, and after the second, entirely disappeared.

The authors would not hesitate, in severe cases, to administer initial doses of 1 1-4 or even 1 1-2 grains of emetine. That the benefit afforded by the drug is permanent was shown in that, after the period of improvement following injections, a return of hemorrhage through secondary vasodilatation did not occur in any instance.

#### THE HARRISON ANTINARCOTIC LAW—IMPORTANT

Several months ago, Treasury Decision 2244, requiring physicians and others ordering narcotic compounds to designate on their official order the quantity of narcotic contained in each tablet or pill, or fluid or avoirdupois ounce, was (as our readers know) temporarily suspended by the government. At the time, we advised all our readers to conform to this ruling, pending final decision. The wisdom of this advice has been shown by the final decision of the government to enforce this ruling, beginning on May 1. Thereafter every physician ordering any narcotic mixture or compound *must* designate on his order blank the quantity of the narcotic contained in each tablet or ounce of the mixture. Do not forget this. We advise immediate compliance with the regulation, so as to get the habit of making those orders correctly, and to avoid subsequent delays.

#### EMETINE TREATMENT OF TYPHOID FEVER

I am especially interested in the treatment of typhoid fever with emetine, which I have used with success in two cases. I gave 1-2 grain night and morning for five days, or in all ten doses, when the temperature came down from 104° F. to normal and remained so until convalescence was complete. That is the best I have ever seen done in forty years' practice. If anyone thinks it won't work, try it. Begin early.

Let the good work go on.

H. H. SMITH.

Lexington, Ohio

[We have received from Doctor Frazier, who first advocated the emetine treatment of typhoid fever—in *The Medical Record*—a very interesting article upon this subject. We hope to print this paper next month.—Ed.]

#### KEEP FRIENDS WITH THE MIDWIFE

At the request of my friend Dr. Geo. C. Howard, president of the Monongahela Valley Dental Society, I submit the following experience of mine with midwives—or, as they are called among the lay folk, granny-women—and with it the photographs of two prominent ladies of "auld lang syne." The larger one of the two, on the right, is Aunt Betty Wiles, who was present at the birth of Doctor Howard's father, sixty-one years ago. The other, Mrs. Emma Cool, was also prominent in her day.



Two Old-Time Midwives

I will not attempt to report all of my associations with the old ladies, as it would occupy too much space, but will speak only of Aunt Susan W., whose home is in Monongahela County. By permission, I will also venture to give what I consider some wholesome advice to all practicing physicians, both young and old, relative to their treatment of these old granny-women, should they ever be thrown into association with any of them.

In the first place, let me say, do not treat the midwife with contempt or criticize her in any manner, but, rather, meet her with a kindly smile and a hand shake; make her believe that you have confidence in her, whether you really have or not. It will be good round dollars in your pocket. For, I assure you, every granny-woman in the land has hosts of friends who believe in her and will not hesitate one moment to take up the cudgel in her behalf. Now to my story:

Some forty years ago, I located, for the practice of my profession, at a small village in upper Monongahela County, West Virginia. The hamlet consisted of a hewn-log church, school house, store, smithy, corn-mill, and about eight or ten dwellings. The inhabitants (as a rule) were rough old-time folk, and withall of a generous and very sociable disposition; and certainly I never suspected that anyone would think of opposing my starting practice in the place. However, I soon found out differently.

One old gentleman in particular, Uncle Billy V., and Aunt Susan W., the midwife, were the hardest propositions I had to contend with. Uncle Billy said: "Begad, it will never do for a doctor to come here. Just look, there hasn't been any sickness here for a long time, and now, if this infernal doctor comes, it will be no time afore we'll all be down sick." Right here I will say, though, that in the end Uncle Billy became one of my best friends, after having rendered him a favor that helped to save him considerable money.

My other opponent, Aunt Susan W., sallied forth and tongue-lashed me wonderfully. I made up my mind to pay no attention to her attacks and to treat her with respect, speak to her when I met her, and for the rest bide my time; for, I was confident that the opportunity would appear when I could lift Aunt Susan from off her high pedestal and let her down to the sphere of ordinary mortals.

Sure enough, ere long the psychical moment presented itself—and it was thuswise. One very dark and murky night, sometime after midnight, there was a rap at my door, and, dressing hurriedly I there found a messenger, who implored: "Doctor, for God's sake, come quick to David A., on Days Run; his wife is near to death." The woman, he told me, was in the throes of childbirth, but was making no headway. Aunt Susan W., he continued, had been there for two days, and was up a stump. She had them send for Doctor S., up near the Pennsylvania line, but, when he came the evening before, he was "as

drunk as a biled owl," "and he is now lying under the bed, with his feet sticking out from under it."

I hurriedly got out my horse and followed the messenger. When we arrived, I found pandemonium, with the house full of women and Aunt Susan with an I-wish-to-gosh-almighty-that-I hadn't-come-here expression on her countenance.

After taking in the situation, I spoke kindly to Aunt Susan and asked what seemed to be wrong, and her answer was: "Go, see for yourself; I think it is either a leg or an arm hanging out, I am not sure which." I saw that something had to be done quickly; so I prepared myself, made an examination, and found the child's left arm protruding, the cord prolapsed, and absence of pulsation. I then told the husband and the others of the mob that the child was dead.

Proceeding to complete delivery, I asked for some hot water, clean towels, "and you, Aunt S.," I said, "I want to help me at this job." Then, as a precaution I loaded my hypodermic syringe with 30 drops of fluid extract of ergot. Having made all preparations, I drew forth a small vial of chloroform.

And then panic came—every blessed woman left the room, and Aunt Susan was about to vamoose, too. However, I managed to coax her to stay. Then I showed the husband how to administer the chloroform, after the woman had come partly under its influence.

Now I just went after those feet, and had no difficulty in bringing them down at once. I do not think it took me more than eight minutes to deliver the child, all parts being well relaxed. There being no uterine contraction, I injected some of the ergot under the skin of her abdomen, and it wasn't long before contractions set in and the membranes were expelled entire. The runaway women then all come back, and Aunt S.'s star of glory had started on its downward course toward the horizon. However, I made a few remarks to the gaping assemblage of neighbors, and told them that, unfortunately, the books which Aunt Susan had studied did not describe this particular kind of childbirth labor. You can rest assured that this speech in her behalf pleased Aunt Susan wonderfully and this made her a lifelong friend of mine. Afterwards I privately sent her cases, when advisable; for, my obstetrical practice after this took a marvelous jump.

The case of Mrs. A., terminated favorably, and I had the pleasure of attending her in confinement two years subsequent to this

trouble. Her husband was highly pleased, and he remarked that he wished now that he had employed me in the other case in the very start of her labor.

Do not ignore the old granny-women.

As to the alkaloids, I will state here that I almost swear by them and that, if any physician will prescribe them and use them as they should be used, he will get results. I am growing old and soon shall be obliged to retire from active work, but always I shall proclaim: Success to the alkaloidal preparations.

W. L. McLANE.

West Union, W. Va.

### "NONSURGICAL" TREATMENT OF CANCER

There can be little doubt about the correctness of many claims that certain forms of external cancer have been cured by methods said to be "non-surgical" but that were immediately and effectively destructive. To distinguish these methods from mere powwowing I have pointed out that they are themselves really surgical, though not the kind of surgery that the crusaders too often mean—excision with the knife. I emphasized in my paper the particular reason why attempts at excision are unwise in this variety of fiercely growing cells. This reason may be restated as follows: The victim of any form of cancer is undeniably a good soil for that form of malignant cell or organism and peculiarly susceptible to its reimplantation, whether this be accidentally done by the surgeon at the operation or occurs in the natural way by erosion of a vein or lymphatic vessel and the vascular transport of the graft. The knife is therefore contraindicated in cancer *unless the cancer can be removed without being wounded.*

The quacks, with their caustics and plasters, avoided this danger of operative reinfection (though not the certainty of an irritative recrudescence of remaining parts of the growth that they failed to kill) for the caustics killed the infected cells in their habitat more or less thoroughly. No doubt many small epitheliomas have been successfully destroyed by them. The weakness of the method was its slowness, painfulness, and particularly its lack of directibility, by which all edges of larger growths could be surely destroyed, for these caustics are but partly selective in their action on cancer tissue and the operator could not assist in the dirigibility.

The special advantage of the newer physical measure, destructive ionization, and to a less

extent thermic surgery, is that this dirigibility is assured, the operator placing the needles in positions to include all of the growth in the destructive action. The intensity of the action being within perfect control, the ionization method permits pushing the action to a final result in growths of any size in from fifteen to thirty minutes, under local or general anesthesia, thus making the treatment painless, as well as bloodless and safe from the dangers of reimplantation.

Of course, all local methods fail actually to cure a patient in whom delay has permitted the formation of internal grafts by erosion and transport, but these newer physical methods can be shown to present better statistics than the excision surgery in cases placed under them prior to metastasis. Ionic destruction, for instance, had been applied by me in 329 cases (counting all, whether metastatic or nonmetastatic) during the twenty-two years ending in July, 1915, with 147 cures, the oldest cured patient living having been treated seventeen years ago. One hundred and nineteen of these were classed as having been operable by the knife and primary growths. Under this method 105 were cured, or 88.2 percent. Two hundred and ten were either recurrent after knife operations or classed as inoperable; of these 42 were cured under the method. All cases except the smallest epitheliomas, were microscopically verified by competent pathologists.

We need all the agitation possible in favor of early destruction of cancerous growths owing to the terrible dangers from metastasis following delay, but we need also a franker examination of the value of our classical methods of prompt treatment before we can make a convincing appeal to our patients to seek treatment early.

G. BETTON MASSEY.

Philadelphia, Pa.

[This is a personal letter from Doctor Massey, which we print because the matter is of such vital importance to many of our readers.—Ed.]

### CANCER PASTES, AND HOW TO USE THEM

In a letter received some time ago from Dr. J. E. Tibbins, of Beech Creek, Pennsylvania he wrote: "If any of the readers of CLINICAL MEDICINE are interested in the painless operation for the cure of external cancer and will enclose a pittance to pay for printing I will mail them the technic of the operation. If

they will follow directions and have the courage to go to the bottom and destroy all malignant cells, they will be more than pleased with the treatment. Not less than 40,000 people died of cancer in the United States in the last year. My experience in the treatment of cancer leads me to believe that 80 percent of the cancers that people are afflicted with are external, and that these are purely local for a time ranging from six months to a year, or even longer. If these growths are destroyed early, while yet local, a cure can be effected in nearly every instance of cancer of the skin."

Oldtime readers of *THE CLINIC* will remember Doctor Tibbins' article upon skin-cancer, which appeared in *THE CLINIC* in 1912.

It must be understood, of course, that, while we are glad to give this information to our readers, we must not be assumed to endorse the treatment advised. We do think it worthy of investigation, however, and see no good reason why the information offered should not be considered carefully by any reputable practitioner. However, we want to give these warnings regarding the paste-treatment:

1. Do not undertake it unless you understand the technic thoroughly.

2. Do not use it at all in cases which seem to be peculiarly malignant and in which the disease is spreading rapidly. A little loss of time may mean the loss of life. Refer the patient promptly to a competent surgeon.

3. The same advice holds true when large areas of skin are affected or when the cancer is close to a vital spot. We repeat—Do not temporize.

Now, with that warning, we hope many of our readers will take advantage of Dr. Tibbins' kind offer.

#### VITAL TRUTH NEVER LOITERS: POSITIVE THERAPY UPHOLD IN MEXICO. SMALLPOX

Singular coincidence! *CLINICAL MEDICINE*, *The Journal of the American Medical Association*, *The British Medical Journal*, and *Paris Medical* all came in the same bundle today. Strange fellowship! Yet, the remorseless tidal wave of truth magnetizes and bears them onward to the same common haven—improved medicine—where all must commune, *volens nolens*, clinicians and journalists.

Frequently I have been denominated a shameless renegade of a Paul from the regular galenic faith—possibly a just epithet. The

why and how of it all is being told almost every month in *CLINICAL MEDICINE* better than I could write it now, were repetition in order. The tense strain the weird shadows of hostile conflict flung upon the faculties of else lethargic memory cast about me a halo of spurring impulse favorable to the writing of the old story.

Now I view with inexpressible admiration the towering majesty of the immortal mind heroically struggling to sustain the waning faith nobly worth a better cause. The startling triumphs of magic chemistry and the eloquent laudations it forces from the inspired brain of masterful literary talent hold one spell-bound under a luring influence, ample to mislead the very elect.

The strange jumble of mail matter came early by water, in a drenching norther, rendering streams impassable, holding me indoors without other caller (an occasion of solitude for twenty-four hours before unknown in my career) provoked a favorable train of disjointed thought of many things past or mayhap to come in our vague intangible medical realm.

Immaculate chemistry and coordinate dispensing pharmacy forge, link by link, what is subtly designed to become the irrefragable chain of medical slavery—too much discussed among you to require more than passing reference by me. I feel qualified for ordinary criticism of current literature; and I have spread out today before me some of the best among high-grade magazine articles—stray copies of which occasionally have passed the censor—and impartially compared them with compositions of medical-journal advertisements, and find magazine articles sadly in the lurch. The chemicals thus boosted are mostly of triumph grade when leaving the laboratories. Yet in every liquid-package, not too intensely alcoholic to decompose, the depreciation (however slightly and slowly while under manufacturing care) certainly starts at once, and proceeds more rapidly after being sent out into the channels of regular trade. Especially in climates of high temperature the process becomes destructive in a degree that neither the prescriber nor the dispenser would dream of.

Few clinicians have had the chemical training and the extensive and varied physiological experience that have been mine. Truly, the majority relegate such niceties to the pharmacist and the trained nurse. Give me the tincture of aconite, for a high-grade demonstration, and I will tell you in ninety minutes of probation in perilous fever the



degree of inferiority, compared with the active principle of the same drug.

Do you, or can you, thus protect your desperate patients, my brothers of ethical elegance? Scientific manufacture of granules and tablets of active principles indefinitely guarantees security against deterioration, if vials are properly corked. I have granules of all ages, from forty years down to my October shipment in 1915, all of equally unabated activity—extreme scarcity of medicines having forced me to the proof.

While pondering this delicate problem, curiosity prompted me to take down the catalogs of some leading gilt-edged chemists, which I had not consulted during the recent terrible years and was surprised to find that my good friends, Hance Brothers & White, fill 100 pages and Parke Davis & Co. 75 pages with active-principle listings. Certainly a timely wise hedging against the inroads the new dispensation encroaches on the long and well-defended battlements of regular galenics. And, doubtless, they produce sterling substances, some of which I have found equal to any of the same I have been using. Burroughs, Wellcome & Co. have likewise developed extremely powerful products.

In normal times, I used more or less of the products of the three firms named, except that the leading active principles, in recent years have come from Doctor Abbott's institution, since I feel it a duty to patronize the nerve and energy his venture required, in the face of the determined and influential opposition that assailed him, and knowing, as I know, that he was right and deserved support.

Since writing last month anent my smallpox involvement, I have been much deeper into the terrible pestilence, with unabated success, having had a heavy list of developed cases. The only change in treatment has been, to use 20 percent phenol in oil, as an application to sloughed surfaces, broken pustules, and ulcers—which is promptly soothing and assuaging to the pain, while exercising a gratifying influence to dry and heal, as well as perfectly disinfecting the patient. The 10 percent phenol in oil, as indicated in my other paper, is the remedy for nose, throat, and eye involvement. Thus combined with calcium sulphide and echinacoid internally, I have had a clean mortality bill in over 50 developed cases, save 6 peon deaths; the latter resulting from bathing and excessive eating of pork, after the actual disease danger had passed.

American doctors continue to dream of a medical Eldorado down here, with munifi-

cant promises of paying practice. Why, one of you, directly from the States, would starve here, with a big cash practice! I have ample means, yet never lived so wretchedly miserable as now I am living, there being nothing to buy, nor fowl, nor egg, nor milk, with scant supplies of blue bull-beef at a dollar a pound, and only the corn bread, and no sugar at all. I have no garden, because seed have been so long on the way that they do not sprout in this hotbed of creation.

*Stay away from Mexico till you know what you are doing.* There are delicate thin rays of light struggling to pierce and illuminate the ghastly gloom, but too feeble as yet to succeed.

I am inexpressibly grateful to the hundreds of brothers among you who are writing me such cheering appreciation for my humble contributions, and am pained to be unable to acknowledge each one personally—which most of you tell me you do not expect.

Many ask me questions about my noble French preceptors; and I have succeeded in securing their portraits, as nearly as possible approximating the time when I was with them, which I will send with this, leaving it to editorial discretion whether to present them as partial answers. Certainly, whatever of vital clinical interest my life-story contains was largely due to their teachings.

Those brothers among you who feel that my lapse from regular galenic practice has encouraged and aided them in any degree would like to see the generous features that once beamed their benign influence on me so intensely that it has been luminously reflected in all worthy usefulness my life has dispensed. My mind was germinated with their skeptical disaffection, whose feeble faith in the clinical merit of the medication of that age and time was focused in negation. The distressing truth was painfully confirmed in early failure down here in this fearful field, precipitating my renegade disloyalty to a delusive dispensation. Those illustrious men, who have left their footprints so indelibly set in the sands of time, have been honored and immortalized by breathing monuments and every other manifestation of grateful reverence the French fraternity could render.

ROBERT GRAY.

Pichucalco, Mexico.

[The pictures referred to by Doctor Gray are those of Herard, Roger and Blache. We shall try to reproduce them in another issue

# Just Among Friends

A DEPARTMENT OF GOOD MEDICINE AND GOOD CHEER FOR THE WAYFARING DOCTOR

Conducted by GEORGE F. BUTLER, A. M., M. D.

THAT ease-loving colored man who never troubled himself about subsistence, so long as his wife could get washing to do, typified one extreme view of woman as a working mechanism in the business world. At the other extreme, is that indignant reactionist who protests against woman's competition in man's domain and shrieks the sacred names of home and mother. Between the two, is a vast body of amused indifference, tintured by radicalism and spotted by militant aggression. Indifferent to both and proceeding with the calm force of an evolutionary movement, is a vast and widening stream of women workers steadily minding their own affairs, and carrying along upon its surface the flotsam of things too small to blockade its way—a Nile not "fretted by the reeds it roots not up."

For, this movement is evolutionary—fully so as is any in nature. It is a part of that process of the suns by which the thoughts of men are being widened. The old order changeth, giving place to new, and a very high purpose is fulfilling itself in many ways. This is only one.

The last twenty years have wrought many radical rearrangements in every field of life. The alterations and improvements have come so insensibly that any sudden survey of the whole is startling. We do not cognize our own acceleration.

The discovery of radium is only a luminous pinpoint in these later heavens, but it has sufficed to reshape every working-theory in physical science. We have learned how to sail the air as ships traverse the waters. We transmit intelligence over great distances, without the aid of wires. We have bridled the energy called electricity and harnessed it to half the world's work. At a stroke, so to speak, we have done away with most of the things that used to be regarded as fixed and necessary; we have broken down the old walls, let fresh breezes into old chambered spaces, we have reconstituted, not only the manner, customs, methods, and standards of life, but in large degree have shifted the

direction and quality of life itself. Hygiene has become a science, the youngest, most vigorous and assertive of them all, with prevention for its object, and by sheer necessity has busied itself in the van of this upward-surge tide.

In view of all these readjustments, it is useless to criticize the appearance of women as workers. They are here. They are going to stay. They are claiming their rights, and are getting them; and for two reasons. In the first place, we have passed out of the primitive theory that man is the fighter, the hunter, the one upon whom alone falls all the labor outside the family or the home; next, it has become a foolish idea to advise or to try to dominate women, in the belief that they cannot advise and manage themselves. The argument that strength and reason are masculine attributes exclusively and that intuition is the single governing process with women falls away before the unanswerable demonstration of everyday fact, and its place is being taken by an automatic adjustment whereby these three attributes operate harmoniously both in the home and outside. Let us recognize this and deal with things as they are.

"Perhaps the restlessness of modern women, which troubles so many good souls, comes in part from the fact that they tired of getting patronizing advice from the opposite sex on matters that are peculiarly their own.

"If it be the motto of the French police to look for the woman, it would seem to be the motto of almost every one in Anglo-Saxon lands to advise the woman.

"Social standpatters condescendingly tell her what is her 'place' and 'sphere.'

"Presidents and kaisers tell her her duty; which is, to bear many children.

"Bachelor college professors tell her how to economize.

"Jim Hill occasionally tells her how to keep house.

"Preachers who have imbibed wisdom by sitting at the oily feet of Mr. Rockefeller tell her how to hold her husband's affections.

"A most impressive reminder of the rapid advancement of women in positions of great business and financial responsibility is to be noted in the work of Miss Christina Arbuckle, of Brooklyn.

"Acting as administratrix of the \$37,500,000 estate left by her brother, John Arbuckle, sugar- and coffee-merchant, she is reported as handling matters with masterly skill and success.

"How many of these men who preach the doctrine of confining the 'sphere of women' to household-duties would be competent to assume such a job?"

Miss Arbuckle is a good example in this matter, but there are many others. Mrs. Charles Netcher, of Chicago, for example: Upon her husband's death, this able woman took over the management of a great and complicated business of many millions yearly. She reorganized it, broadened it out, accommodated it to the rising whorl of trade in one of the most wonderfully expansive cities on earth, and piled it up into a colossal and magnificent establishment, such as within the same twenty years would have been called a wild or impossible dream. You never hear of her. She is a worker, one of the leaders in a distinctive and strictly modern development of high significance in the domestic economy of our day. I don't say that a man could not have done the same thing. Men are doing things just like it. I merely point an argument with an instance where a woman operates the inner springs of vast and successful business actions.

Such women are at the top. They apotheosize the European wife's participation in her husband's occupations. In Germany, but more particularly in France, the woman is the man's counselor and assistant in the shop or store, making an absolute community of interest with him, without assuming headship in the firm or the family. Some great business women have developed out of that system.

England followed America closely in knocking away the old restrictions, and, next to this country, even now, shows the widest range of freedom in employment for all who wish to enter fields heretofore occupied wholly by men, in shop or office work. The spirit and effect of that emancipation are delightfully, but strikingly, shown in one of last season's most successful plays, "The Twelve-Pound Look," a domestic and social comedy

reflecting actual life and pointing the meaning and influence of woman's independence, won by unaided effort in honorable business endeavor.

Few of us stop to consider the effect of the typewriting machine, the telephone exchange, and the skyscraper. It is difficult to dissociate these in their promotion of feminine employment. The machine and the phone have become, industrially, the property of women. The skyscraper, forced toward the stars by bulging real-estate values, has operated powerfully in concentrating work and consolidating it with comfort, convenience, and hygienic surroundings.

This condition prevails in many lines, both commercial and professional. As fast as it has been found out that women can manage an office, conduct correspondence or keep accounts just as well as man can, or even better, women have been drawn into those employments and have succeeded—are succeeding—in rising degrees from year to year.

These are the lines most fully occupied. The better sort of commercial establishment comes next. Below there depends a long list calling for less mind and more muscle. In all the number of women employed is augmenting, but the department-store and the factory call most insistently for that advance in physical and moral conditions, without which the general movement itself would work out a breadth of calamity exceeding its benefits by far.

The appearance of women in office-work brought with it better sanitation. The instinctive consideration of men for women has done away with stuffy rooms, poor light and worse ventilation. The development of office-buildings on a gigantic scale has been directly influenced toward perfection in architecture and construction by this one thing more than by any other. No such building now is without its rest-room. All have conveniences that never were thought of before. Every one of them offers to women the same facilities and comforts that accompany life in the home as fully as office occupations permit. The result is shown in a marked effect upon the health of men as of women. It has demanded, and made possible, careful sanitation. It has been the cause of the universal introduction of highly perfected sanitary appliances that have raised the general health averages of many cities.

The packing together of enough people of both sexes to equal the population of a sizable country town, keeping them within four walls and under one roof, is attended now by positive hygienic advantage to all, which established custom in the office routine of business in its present forms has practically done away with that taint of prurience that accompanied the first large advent of women in business-life.

These women have shown ample ability to take care of themselves in every way. They originate in various social strata, and, aside from their occupation, cannot be assigned to any special class; but, I should say that fully one-half their number is fairly educated and of good antecedents—say the upper middle class. They have brought a new and valuable element into the business of the country. They have, moreover, demonstrated the power of women for self sustention, and furnished a practical argument in favor of their right to vote. In that particular, they have gone vastly further than the women who do the work of horses in some parts of Europe—say, in Holland and Belgium or in the fields of France—and whose natural demand would be nearer oats than votes. Our women in business are the aristocrats of labor, broadly speaking. The demand for help lies among those in occupations of lower pay, longer hours, coarser tasks, and greater risks.

The women and girls in the great stores—the shop-girls—present a condition that cries out for correction. It is aside from the main point to state the unhappy truth that most of these establishments are informal harems. The pay is small out of all proportion to the labor involved, yet, appearances must be kept up. Arnold Bennett remarked, with admiration, that the shop-girls of New York were better dressed than any others he ever had seen. His admiration might have been qualified by pity, had he known the full truth. For them to make their absurdly small wages cover car-fare, board, lodging, and clothes—the fixed costs of mere living—is really out of the question. Their income must be increased from outside sources. It is common knowledge that in a frightfully large number of cases this plus is increased in that age-old way that calls for no further definition. Employment covers the wretched expedient with a cloak of outward respectability, but the pitiful fact is none the less a fact for being concealed. How far it may effect changes in the ranks, it is impossible

to say. It marks a state of helotage at bitter opposition with every prompting of freedom and decency.

Still, there are features that are directly reachable and that can be shorn of their power to do harm. Some of these are in the control of their victims, others lie at the door of the employers.

In most places where the attendants and salespeople are women or girls, they are kept on their feet from eight to ten hours every weekday. No woman can long be subjected to that physical strain and escape serious internal displacements. The abdominal cavity is capable of containing all the blood in the body. Its arrangement does not permit the telescoping process. A long fight is put up by nature to protect that arrangement, and so the blood flows from other parts into the area of conflict, until a breakdown comes. Inferior nourishment and insufficient rest meanwhile added to the damage; while when the breakdown comes it brings prolonged invalidism. Escape is open by the avenue of domestic service, but this is unanimously detested; or, it is by the other one that leads to the brief, fevered, false life of the lost.

The plight of factory-girls, of women and children employed in the manual labor of sweatshops and mills is getting adequate attention as a result of agitations mainly carried on by women of spirit, convictions, and means, who have compelled attention from lawmakers and public-health-authorities. The demand for amendment runs most powerfully in behalf of women in more genteel employments, and the answer to it must come at the hands of some one or several of the societies for industrial, physical or moral betterment.

Foremost among these associations, to my mind, is the American Society for Physical and Moral Prophylaxis. This society has been organizing a movement to stamp out just such evils, stop corruptions at their source, and generally lift the level of morality as well as of physical hygiene by bringing to bear the most enlightened knowledge furnished by modern science, backed by the sympathy of earnest men and women working together systematically. Local branches of this society are being organized throughout the land, the cooperation of physicians being especially desired, but the body of workers and counselors being drawn from non-professional life. It deserves the support of the physician

# Among the Books

## SECRETS OF HAPPINESS

Eight Secrets of Happiness. Edited and Published by W. A. Barnes & Co., New York. Price 50 cents.

Whatever one's conception or definition of happiness may be, in the abstract, we suppose, everyone is ready to admit that, in the concrete, it includes at least a condition of physical wellbeing. It is this phase of happiness with which the author of this little book (whose name does not appear) deals, in a simple and helpful fashion. The eight secrets are eight principles of healthy living. We do not purpose to give the secrets away. They may be yours or your clients' for fifty cents—cheap enough for such valuable secrets.

## NURSES' TEXTBOOK SERIES

The Nurses' Textbook Series. *Materia Medica and Therapeutics*, by Linette A. Parker, B. Sc., R. N.; *Chemistry and Chemical Uranalysis*, by Harold L. Amoss, S. M., M. D.; *Outlines of Internal Medicine*, by Clifford Bailey Farr, A. M., M. D. Illustrated. Philadelphia and New York: Lea & Febiger. 1915.

The authors and the publishers of this series have set themselves a rather difficult task. To impart enough, yet not too much; to be generalistic, without being superficial; to give a slight knowledge of a subject, which shall at the same time be more than a smattering—this is the problem that confronts anyone who undertakes to teach medicine and its collateral branches to the nurse. And it is a problem that calls for all that one has of skill and resourcefulness, to say nothing of the faculty of getting the viewpoint of the class of persons for whom one is writing.

In the three volumes thus far issued in the series, this difficult task has been achieved with praiseworthy discrimination and judgment. Especially is this true for the volume on internal medicine, which must have been the hardest of all, in this respect, to write. Doctor Farr has known just where to draw the limitations of his subject, without making these limitations into no-thoroughfares. And

that is no small accomplishment. The same thing is true of the chemistry and the materia medica; but, of course, these subjects lent themselves much more readily to limitation.

Taken altogether, all three of these volumes of the nurses are excellent, practical textbooks, well adapted to that systematic instruction of nurses which of late years has happily replaced the former hap-hazard methods.

## JOHNSTON'S "MEDICAL APPLIED ANATOMY": A CORRECTION

We regret that in the October number of *CLINICAL MEDICINE* (p. 980), we gave A. & C. Black as the publishers of Johnston's "Medical Applied Anatomy," also stating that the price was \$1.80. We were in error in both points: this book is published by The Macmillan Company, 64-66 Fifth Avenue, New York City, and the price is \$2.50.

## FAUGHT: "LABORATORY DIAGNOSIS"

*Essentials of Laboratory Diagnosis: Designed for Students and Practitioners.* By Francis Ashley Faught, M. D. Fifth edition, revised. Philadelphia: The F. A. Davis Company. 1915. Price \$3.00.

The author frankly avers that his book is not intended to take the place of the many excellent and exhaustive textbooks on clinical medicine that are in the field, but, rather, to supplement them by pointing out to the busy student and practitioner simple and reliable methods by which he may obtain the desired information without incurring unnecessary expenditure of time upon difficult, tedious or untried procedures.

In this little book are presented, in concise fashion, a selection of analytical methods employed in the clinical laboratory, without burdening the student with useless, cumbersome detail; at the same time, it contains all the information necessary to provide a working-knowledge of clinical laboratory-methods for the general practitioner. Doctor Faught's experience and reputation, both as a worker and as a teacher, are sufficient guarantee of his being equal to the task.



In the present edition, the same general plan has been followed as in those preceding, although in the rearrangement accompanying the revision the author has found it necessary to eliminate, whenever possible, all discussion of clinical pathology and to confine the subject-matter more closely to laboratory technic.

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**HORSLEY: "BLOOD-VESSEL SURGERY"**

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Surgery of the Blood-Vessels. By J. Shelton Horsley, M. D. Illustrated. St. Louis: The C. V. Mosby Company. 1915. Price \$4.00.

To no department of surgical endeavor have Americans contributed so largely in recent years as to that of blood-vessel surgery. The end-to-end suturing of Murphy, the endoaneurismorrhaphy of Matas, the blood transfusion of Crile, the arterial occlusion of Halsted, and the technic of Carrel and Guthrie, all these achievements have been prominent milestones along the march of progress in this department of surgery, beside which Europe can hardly point to any equal accomplishments.

A monograph dealing with this historical aspect of the subject would be both interesting and instructive. But it is not with this side of it that the present volume deals. It is the author's aim to present the scientific and laboratory features of vascular surgery in their practical aspects, such as will be of clinical value to the surgeon and the practitioner. Consequently, the treatment of such conditions as hemorrhage (pathologic and traumatic), aneurisms thrombosis and embolism, congenital *nævi*, varicose veins, hemorrhoids, and the like, are discussed, with the method of suturing vessels and transfusing blood adequately explained.

A goodly portion of the volume is taken up by the original work of the author himself—for which he apologizes in the preface, but which, in the reviewer's opinion, needs neither apology nor vindication; for, to our thinking, it is exactly this feature, more than all others, that justifies this—or any other—medical monograph.

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**STEVENS: "PRACTICE OF MEDICINE"**

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A Manual of the Practice of Medicine: Prepared Especially for Students. By A. A. Stevens, A. M., M. D. Tenth edition, illustrated. Philadelphia and London: The W. B. Saunders Company. 1915. Price \$2.50.

The preceding edition of this book was issued in 1911, but the intervening years have been busy and fruitful ones in the realm of medical science; adding much to our available knowledge and resources, canceling some of our former ideas and practices, and working considerable change in this domain generally. There is scarcely a chapter in the present edition of Doctor Stevens' book that does not reflect this change in more or less marked degree; some have been entirely rewritten; a number of new ones have been added; there is hardly one that has not been enlarged and altered to conform to the advanced status of the times. The plan of the book, however, remains the same.

This is a manual of exceptional value. Doctor Stevens, himself a teacher of many years' experience, knows what is required of such a work, and has here supplied the demands. While, as its author avers, it is written especially for medical students, the practitioner also will find it useful and instructive, since he, too, often has need of information in condensed and easily findable form.

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**TOWNS: "HABITS THAT HANDICAP"**

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Habits That Handicap: The Menace of Opium, Alcohol, and Tobacco; and the Remedy. By Charles B. Towns. New York: The Century Company. 1915. Price \$1.20.

In his introduction, the author makes the rather startling statement that there are, in the United States, more victims of the drug-habit than there are of tuberculosis; and he calls attention to the fact that until very recently the world had heard practically nothing of the blameless men and women who had become drug-users as a result of illness. The fundamental principle in the remedy of this deplorable state of affairs, the author declares, is the adoption of methods which will put the entire responsibility upon the doctor. Whether one agrees with this statement and this stipulation or not, it must be admitted that there is, as Mr. Towns asserts, a woful ignorance on the part of the average physician in regard to the dangers and complications of opium administration, and also as to the nature and treatment of the drug-habit.

Mr. Towns is not a physician; but he is a man who has given great thought and investigation and attention to the subject of drug-addiction, and his statements and opinions are entitled to deep respect. As

most of our readers know, he is the joint administrator, together with Dr. Alexander Lambert, of the Towns-Lambert system of treatment. In this book are assembled, and presented in terse, forceful fashion, all of his experiences and conclusions; and they form a very powerful and valuable contribution to the subject, well worthy of the thoughtful consideration of every physician. Not the least valuable feature of the book is its constructive and practical note. It not only exposes the evil, but points the way toward remedying it.

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**SWANBERG: "THE INTERVERTEBRAL FORAMINA"**

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The Intervertebral Foramina in Man: Their Morphology and a Description of Their Contents and Adjacent Parts. By Harold Swanberg. With an Introductory Note by Professor Harris E. Santee. Chicago: The Chicago Scientific Publishing Company. 1915. Price \$1.75.

This book is a supplement to the same author's work entitled "The Intervertebral Foramen," which was published in 1913. Like that former one, it is a splendid piece of work in special anatomy, such as will appeal strongly to the neurologist and to the anatomist, and may even serve a useful purpose in the instruction of students in neural anatomy; but we doubt whether it will arouse much interest or attain much of a sale among the rank and file of practicing physicians.

Mr. Swanberg's former work was based on investigations upon lower animals; in this book he corroborates and enhances those investigations by an equally careful study of the human foramina. The most important practical significance of his work is, that the facts revealed by him will necessitate a complete restatement of the rationale of "cures" effected by spinal manipulation.

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**MORRIS: "TOMORROW'S TOPICS"**

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Tomorrow's Topics Series. By Robert T. Morris, M. D. Three Volumes: Microbes and Men; A Surgeon's Philosophy; Doctors Versus Folks. New York: Doubleday, Page & Co. 1915. Price, per volume, \$2.00.

In his preface to this series, the author tells a delightful anecdote about a respectable, conventional bachelor, yclept Jeff, who used to sit at table with Francis Dwight and himself, and listen to their speculative and philosophical discussions, and who enquired (in their absence) of a rather clever young woman

(also a mutual friend) whether these two young men were to be taken seriously, to which she replied, "Why, that all depends upon yourself, Mr. Jeff."

The anecdote is exceedingly apt. It all depends upon yourself, Mr. Reader, whether you take these reflections of Doctor Morris seriously or not. For our part, we are so delighted to find a man of ripe experience in medical practice who is disposed to philosophize at all, that we are not disposed to be critical or quizzical, but are perfectly content to lean back in our Morris chair (we could not resist the pun) and hear him talk without being too particular as to whether he is serious or in fun. Indeed, the two are inextricably mixed up in real life; how should they be otherwise in genuine philosophy?

They are delightful books. They contain the philosophy and wit of a sensitive, intuitive man who has touched elbows with life in all its phases, and has not been soured, but mellowed, in the process. There are all too few such men in the medical profession, where, one should think, they ought to grow and flower, if anywhere. In these books, Doctor Morris has builded himself a much more enduring monument than his surgical career could ever have afforded him.

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**MOWAT: "X-RAYS"**

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X-Rays, How to Produce and Interpret Them. By Harold Mowat, M. D. New York: Oxford University Press. 1915. Price \$3.00.

This book is written for those who have little or no knowledge of the subject of the x-ray, and is, therefore, very elementary. The elementary facts are stated in such a simple, straightforward, yet, comprehensive way that the student or practitioner, when he has read it through, may be able to feel that he has, at least, a good general idea of this branch of medicine.

The subject of therapeutics has not been gone into, as this is now so large as to merit a volume by itself. The chapters on the thorax and the digestive apparatus have been placed ahead of those on bones and joints, because they have received so much recent study, and the author believes that the future importance of radiography is largely bound up with them. The author asks indulgence regarding accuracy of citations, on the ground that he is at present on service, and for that reason was unable to lay his hands on books or articles under reference.

# Condensed Queries Answered

While the editors make replies to these queries as they are able, they are very far from wishing to monopolize the stage and would be pleased to hear from any reader who can furnish further and better information. Moreover, we would urge those seeking advice to report their results, whether good or bad. In all cases please give the number of the query when writing anything concerning it. Positively no attention paid to anonymous letters.

## Answers to Queries

ANSWER TO QUERY 6054.—“Dysmenorrhea.” Regarding the case of dysmenorrhea, discussed in Query 6054 (December, 1915), I may say that I have had scores of such patients, which medical aid would not reach, but in which, upon examination, I generally found that there was a major subluxation of the second lumbar vertebra, and a prominence of the ilium, and that that caused the trouble. By a proper adjusting of this subluxation, together with an adequate dilation of the anus—so as to keep the bowels in action—I have been able to overcome the most obstinate of these cases. I only wish I were where I could demonstrate this to you, but shall be glad to answer any questions any reader may ask.

J. McDONALD.

Jamestown, N. D.

ANSWER TO QUERY 6050.—“Mental Maldevelopment and Opothorapy.” On page 1171 of your December issue, in answering Query No. 6050, you give some information about the use of pineal-gland substance in certain mental and developmental disorders. This is doubtless valuable information, even though circumstances militate very much against the use of this agent in everyday practice; for the cost is far too great and the treatment too long-drawn-out.

Your querist asks for help in the treatment of a child, twenty months old, which is apparently nearsighted, has an internal squint, and is of improper mental development. From these few facts, I would suggest that it is much more likely that this child has a pituitary disorder with, perhaps, an increased amount of granular tissue.

Naturally, it would be difficult to discover a number of the signs of this disorder in so young an infant; however, there may exist bilateral hemianopsia or even a primary optic atrophy, both of which conditions result from pituitary tumor. It is when this growth extends over the edges of the sella turcica, that there may occur pressure on the sixth cranial nerve, with consequent paralysis of the external recti muscles and internal strabismus.

Mental maldevelopment is one of the most common manifestations of hypopituitarism, and, so, your correspondent should consider the possibility of pituitary disease; for, he has mentioned several likely signs of just this condition.

As to treatment, that is very difficult; still, in any event, whole pituitary substance is much more likely to be effective here than the pineal substance. And it is not so expensive.

HENRY R. HARROWER.

Glendale, Cal.

## Queries

QUERY 6175.—“Opisthotonos and Edema of Extremities.” C. W. C., Virginia, presents the following clinical data and asks therapeutic suggestions.

“A man of forty-eight, sick about three years. Diagnosis, locomotor ataxia. Spent one year in hospital, leaving that institution six months ago. The present conditions for which I should like to have help are the terribly swollen lower limbs and feet, and the

severe cramps in them. His legs up to his knees are like churns, but there is also some edema above the knees. The cramps come on whenever he tries to straighten his legs, but especially at night in his sleep. Should he get both legs stretched out in his sleep, he is awakened at once by the terrible cramps. Sometimes the cramps are so bad that nothing but his heels and back of head touch the bed, and he has a terrible time before he can ‘get

himself broken down,' as he terms it. The same thing occurs when he tries to walk, which he can only do with a man on each side of him. If he gets his legs a little bit too straight, he will yell with pain and go down in a heap, unless the assistants hold him. His mind is bright and he eats and digests well. Kidneys are normal, bowels slightly constipated. He sleeps like a log, except for the cramps. I have reduced the edema on several occasions by powerful elimination, but in forty-eight hours it is as bad as ever. The patient tries very, very hard to walk a few steps each day, and suffers very much while doing it. He had a professional masseur work on his legs and body for months, but no permanent improvement resulted. He denies syphilis as a cause, and blood tests have time after time proven negative.

"Now, what can be done for the edema and to relieve the cramps? Can I promise this man anything but a life of invalidism? He drank considerably between thirty and forty years of age and lived on the fat of the land."

After the most careful consideration of the clinical data presented, we are at a loss to explain the edema of the lower extremities. This symptom does not usually obtain; in fact, it is rarely observed in uncomplicated tabes; furthermore, it is unusual in this disease for the patient to suffer from opisthotonos. The cramps in the legs are not unusual, though we should hardly expect opisthotonos to occur under such conditions, and this symptom usually evidences serious involvement of the cord.

What was the early history in this case? Were the legs not edematous, would the patient have difficulty in walking; i. e., does he present the typical ataxic symptoms— inability to stand with eyes closed, and so on? Has the urine been examined recently? What is the condition of the heart? Is the area of hepatic dulness increased?

It is more than probable that the entire condition is due to overindulgence in alcohol; i. e., hematic cirrhosis. We are the more inclined to this opinion as to the alcoholic origin of the condition, as syphilis is denied and repeated Wassermann tests have been negative. Can you detect areas of anesthesia about the body? The limbs, of course, owing to the edema, would be more or less anesthetic.

It is just possible that full doses of blue mass, followed by apocynoid, might prove beneficial. On general principles, chromium sulphate might prove helpful.

The present writer usually administers rather large doses of blue mass and soda, say, blue mass and soda, 2 1-2 grains hourly for three doses at night, and a full dose of magnesium sulphate (effervescing) the next morning. He then begins with the administration of apocynoid, giving one or two tablets every two hours until watery stools are secured; in some cases, small doses of scillitin with barosmoid, 1-3 grain, may be added every four hours.

Much, of course, depends upon the condition of the kidneys themselves. It is impossible to prescribe for the cramps without knowing something more definite of their origin. Hyoscyamine or cicutine might control them. The application of hot compresses to the spine should also be tried. Also, it might be worth while to place the patient in a hot wet-pack for an hour, say, every third day.

QUERY 6176.—"Gleet Following Double Orchitis." P. H. J., Wyoming, desires us to outline treatment for a man of forty-four who contracted gonorrhea fifteen months ago. "Last July, his right testicle became greatly inflamed and enlarged (about four or five times its natural size), which condition was cured in two weeks. Then, in December, the left testicle became affected the same way, and it was also cured in two weeks. At times, there is no discharge from the penis and at other times there is considerable mucopurulent discharge. Under calcium sulphide, methylene-blue, and potassium permanganate, the case has improved slightly but the gleet persists."

Without a much clearer idea of basal conditions, we are, unfortunately, unable to prescribe intelligently for this patient. It is probable that this man has an epididymitis. As you had to deal with a double orchitis, it is more than likely that he is permanently impotent. The present source of mucopurulent discharge must, of course, be definitely ascertained. A urethral smear should be obtained, also the urine voided on arising in the morning be secured by the three-glass method. Both the smear and the urine should be promptly forwarded to a reliable laboratory, for examination. Much might, perhaps, also be learned from examination of a specimen of the prostatic fluid, obtained by "milking" the gland per rectum.

It is, of course, difficult—indeed, practically impossible—to check the discharge unless the causative condition is recognized. If the bladder is infected, it should be irrigated;

if the deep urethra alone is involved (which is unlikely), appropriate instillations must be made. In some cases, the lacuna magna is the seat of the infection, and the discharge will persist until this pocket has been thoroughly cleansed out. The procedure for this is described in specific literature. But, judging from the general description, your patient would seem to require the services of a thoroughly equipped genitourinary specialist.

Meantime, calcium sulphide and arbutin might be given with advantage, together with hexamethylenamine, while thymol iodide solution in oil may be injected into the urethra and the rectum. However, we hesitate to recommend definitely these or any other remedies until we have a clearer idea of conditions.

When forwarding the reports of the pathologist, give us some idea of the condition of the prostate gland and seminal vesicles, as revealed by rectal examination. Is there any evidence of stricture or a hypersensitive condition of the deep urethra?

QUERY. 6177.—“Fumigating-Cones and Ribbons.” L. H. B., North Dakota, wishes to know whether it would be practicable to incorporate the ingredients generally used in fumigating-ribbon with charcoal, in such a way that it will light easily and burn slowly, thereby fumigating the air; he having in mind, principally, balsam of tolu, benzoin, cascarilla, orris-root, storax, balsam of Péru. He says that “there are various such preparations on the market, but not any of those of which I know can be used for the purpose for which I want them.”

Of course, there are any number of fumigating-powders, pastilles, and papers upon the market, most of the pastilles being cone-shaped, produced by mixing red saunders or wood-charcoal with odorous resinous substances, potassium nitrate, and mucilage. By using charcoal, black pastilles are produced, while red saunders produces the red variety. Here are some formulas that may meet your requirements:

Benzoin.....	av. ozs. 2
Cascarilla.....	av. oz. 1
Myrrh.....	av. oz. 1
Potassium nitrate.....	av. oz. 1-2
Potassium chlorate.....	grs. 60
Charcoal.....	av. ozs. 4
Oil of cloves.....	fl. dr. 1
Oil of cinnamon.....	fl. dr. 1
Oil of lavender.....	fl. dr. 1
Mucilage of tragacanth.....	sufficient.

Mix the first six ingredients, previously reduced to fine powder, add the oils, and then

incorporate enough mucilage to form a mass. Divide this into pastilles weighing about 60 grains, and dry.

Charcoal.....	av. ozs. 30
Potassium nitrate.....	av. oz. 1-2
Water.....	fl. ozs. 33
Tragacanth, powder.....	grs. 300
Tincture of benzoin.....	fl. ozs. 1 1-2
Peru balsam.....	grs. 300
Storax, crude.....	grs. 300
Tolu balsam.....	grs. 300
Oleobalsamic mixture.....	fl. drs. 2 1-2
Cumarin.....	grs. 8

Saturate the charcoal with the potassium nitrate previously dissolved in the water, then dry, reduce to powder; incorporate the tragacanth, and then the remaining ingredients. Now form a mass by the addition of sufficient mucilage of tragacanth containing 2 percent of potassium nitrate in solution, and divide into pastilles.

Thus, the pastille mass essentially consists of benzoin, charcoal, potassium nitrate, and mucilage. Any of the aromatic oils may be added. For instance, a formula in our possession names vanillin, cumarin, musk, civet, oil of rose, oil of bergamot, oil of ylang ylang, oil of rhodium, oil of sandal-wood, oil of cinnamon, oil of orris, and oil of cascarilla.

A basic formula, which you probably will find satisfactory is as follows:

Benzoin.....	av. ozs. 10
Charcoal.....	av. ozs. 24
Potassium nitrate.....	av. oz. 1
Sassafras.....	av. oz. 1
Mucilage of acacia.....	sufficient

Mix the first four (in fine powder), add the mucilage, form a mass, and make into pastilles.

To prepare fumigating-powder, mix benzoin (grs. 240), tolu gum (grs. 240), and storax (grs. 60) with alcohol (fl.ozs. 4), agitate occasionally for several days, filter, and add Peru balsam (grs. 60); oil of cinnamon (4 drops); oil of lavender flowers (4 drops).

To prepare fumigating-paper, pieces of unsized paper should be saturated with the liquid or, if for any reason powder is preferred, clean fine sawdust may be used and a tablespoonful of this scattered over a pan of live coals. As a matter of fact, fumigation is more thorough when done in this way than by using pastilles.

QUERY 6178.—“Dribbling of Urine.” R. R. H., Virginia, has a patient, a man aged fifty-five, who is troubled with dribbling of urine both night and day. He thinks that some time ago he read an article in which it was stated that rhus tox. was a specific for this disorder in women, and wonders whether this is true for men also.



If *rhus toxicodendron* exerts an influence upon the vesical sphincter of women, it should also do so in men; and, in fact, we have found the drug thus serviceable in many such instances, especially if combined with eupurpuroid. *Thuja* may be also given with advantage in many cases. Where the incontinence is of nervous origin, solanine proves useful; while hyoscyamine and hydrastoid prove curative in certain cases. However, as you will readily understand, the cause of the "leakage" must, if possible, be ascertained.

If you will give us a clearer idea of the underlying conditions and, if possible, give us a report on the patient's urine, we shall be in a position to offer more definite therapeutic suggestions.

QUERY 6179.—"Emetine Reaction and Pyorrhea." J. B. McC., Illinois, writes: "I am somewhat at a loss in regard to the reaction of emetine hydrochloride. I find a large scab at the point of injection and the muscles are very sore. The patients become nauseated, as a rule. The teeth show considerable improvement, but in one instance I am unable to stop the formation of pus around two teeth. In all cases, I find the teeth a trifle loose, though not enough so to render mastication uncomfortable."

It is a fact that some individuals are more susceptible to emetine than are others. However, there certainly should be no "scab at the point of injection." If you will follow the technic outlined in the brochure on pyorrhea and its treatment, mailed herewith, we think you will have no further trouble.

Be sure that the fluid is warmed to body-temperature before giving the injection, and take pains to avoid superficial (subdermal) injections. Emetine solutions must be deposited in the loose areolar tissue underlying the skin, while the more slowly the injection is made, the better it will be.

Provided the person has the tartar and other deposits properly removed, we believe the formation of pus around the teeth will cease entirely if you will instruct the patient to use peroxide of hydrogen; then, after thoroughly drying the parts with pledgets of cotton, to apply a little diluted tincture of iodine on a cotton-wrapped probe or toothpick. Then, after three or four days of such treatment, inject, with a blunt dental needle, borematine around the teeth three times a week. Have the patient use such an astringent antiseptic mouth-wash as borothyme every morning and night and before and after

each meal. A piece of gauze wrapped around the finger or the use of a rubber masseur will prove a great deal more satisfactory in such cases than a toothbrush.

QUERY 6180.—"Treatment of Inevitable Abortion." P., Illinois, writes: (1) "I have trouble with all my abortion-cases. Have tried a variety of expedients and remedies but these procedures do not seem satisfactory to me. What is 'good treatment' in inevitable abortion?"

(2) "A woman pregnant two months has, for the last three weeks, had severe pains continuously, but no hemorrhage. She has become very weak. What shall I do?"

It is quite impossible to cover fully the subjects of your communication. If we divide abortions into two classifications, threatened and inevitable, the question of treatment is simple. The difficulty lies in placing each case in the proper class.

In threatened abortion (not inevitable), we should endeavor to prevent the expulsion of the fetus, whereas, in an inevitable abortion, the sooner we empty the uterus, the better. But, bear in mind that an abortion can only be regarded as inevitable when so large a portion of the ovum is detached that life henceforth is impossible.

Palliative treatment naturally consists of rest in bed, in the recumbent posture, and the taking of remedies to check the hemorrhage and uterine contractions. Very small doses of morphine and atropine, in alternation with hydrastoid, sometimes prove useful. For the active treatment, we shall have to refer you to any good modern work on obstetrics.

As you will readily understand, where abortion is inevitable, the immediate removal of the ovum, preferably with the curette, is the treatment of choice; occasionally expression of the ovum is possible, but only when it is detached and the cervical canal sufficiently dilated to allow it to pass through. In such a case, of course, intrauterine interference is unnecessary. You will find this entire subject thoroughly covered in Jellett's "Manual of Midwifery" and in DeLee's "Principles and Practice of Obstetrics."

As you will readily understand, before we can prescribe for your patient, who has been pregnant two months and suffers from severe pain, we must have a clearer idea of the pelvic conditions and the cause of the pain. It is just possible that there is some malposition of the uterus or that the organ is held down by adhesions. You do not state the

exact location of the pains or their character. Is there vomiting? Has the urine been examined? Is she constipated? Make a thorough examination and give us all the light you can, together with report of findings in a specimen of the 24-hour urine. We shall then be in a position to aid you more intelligently.

If the pain persists, it strikes us that it would be well (especially if examination reveals any marked uterine or pelvic abnormality) to secure counsel. Operative interference may be necessary, but it must be remembered that some women complain very bitterly until the end of the third month.

Some time ago, a correspondent asked us whether in case of abortion it would be better to ignore the retained placenta, some temperature being present, or to remove it at once with a curette. We replied that it would be extremely bad practice to leave shreds in the uterus, and quoted from Jellett's "Manual" as follows:

"It should scarcely be necessary to condemn the expectant treatment, but, as some customs die hard, it is perhaps safer to do so. The expectant treatment was in the past usually adopted, even recommended by so great an authority as Winckle. Where part of the ovum was discharged, the physician waited until one of three things happened; i. e.: (1) the remainder of the products of conception came away, the termination devoutly hoped for, and when it occurred the advocates of the treatment pointed out how successfully they had avoided any intra-uterine interference; (2) the ovum decomposed and evidences of sepsis presented; (3) patient lost as much blood from repeated hemorrhages as was considered safe.

"If the second or third termination occurred, the uterus was emptied, but, unless they occurred, the condition was allowed to persist. The natural result of such a line of treatment is that in a certain proportion of cases the remainder of the ovum or placental debris comes away spontaneously and the patient gets well; more often, however, intrauterine decomposition occurs, and the infection extends to the tubes, pelvic peritoneum or the connective tissue, and the patient becomes a chronic invalid or succumbs to sapremic intoxication.

"Such procedures must be absolutely condemned. The proportion of cases in which interference is not required is infinitesimal, and the longer it is postponed, the more difficult it is to carry out, owing to the closure of the cervix.

'There are, it is true, some old-fashioned practitioners who allow 'nature to take its course,' because they are afraid to interfere; and it must be remembered that interference by an incompetent man decidedly increases the jeopardy of the patient.'

If you can lay your hands on the October, 1915, issue of *CLINICAL MEDICINE*, see also our answer to Query 6040, "Proper Procedure in Abortion-Case." This does not deal with the medical side of the subject, but with one which is often of the greatest importance to the physician himself.

QUERY 6181.—"Anaphylaxis." G. L. M., Texas. Concerning your request for concrete information anent anaphylaxis: as to whether there is danger of such reaction in using antidiphtheritic-serum at intervals of six weeks, in a normal person, for prophylactic purposes, or what would be considered safe intervals between injections, the following brief explanation probably will cover the points.

To begin with, anaphylaxis, in its true sense, is not of very frequent occurrence in actual clinical practice. However, we do not here refer to what is known as serum-sickness and serum-rashes; although possibly these are minor manifestations of anaphylaxis.

The characteristic feature of true anaphylaxis is essentially, a disturbance of the respiratory function or even complete respiratory failure (with, naturally, resulting death). At least, that is the principal clinical manifestation.

The attention of clinicians has been directed to this condition of anaphylaxis largely as the result of experiments with cavies—or guinea-pigs—these animals probably being the most susceptible to it. This it was that, often seeing death result from the injection of even small quantities of a foreign proteid after the experimental animals had been sensitized, led medical men to fear that the thing would occur in humans. Fortunately, experience has shown this to be very rare, at least so far as a fatal issue is concerned.

The present concentrated globulin-solutions marketed as diphtheria-antitoxin are very much less prone to give rise to serum-rashes, anaphylaxis, and other like disturbances, than was the original raw horse-serum formerly employed.

In this connection, it should be recalled that there are a large number of individuals who are possessed of a peculiar idiosyncrasy to the proteids of horse-serum; consequently,

these are the ones more likely to be unpleasantly affected. Unfortunately, it is impossible to determine this susceptibility except by actual individual experiment.

The first injection, no matter what the amount, does not produce anaphylaxis. Still, a first injection may produce a serum-rash in a highly susceptible individual; and this symptom may be—and sometimes is—rather severe. During the first ten days after an injection of a serum (or, in fact, of any foreign proteid matter), the subject becomes sensitized. But, it takes ten days for this sensitization to develop; and it does not occur in ten days after any given injection, irrespective of how many previous injections of the same serum have been given. To illustrate: A patient receives an injection of antidiphtheria-serum and this is repeated every forty-eight hours for an indefinite number of times. Since the intervals are but two days, instead of ten days, the intervening period is inadequate for the patient to become sensitized; consequently anaphylaxis does not occur—despite numerous injections. But—note well—within the period of ten days next following the cessation of the injections, the subject becomes sensitized; and now, if he receives another injection of the same kind of animal-serum, the symptoms of anaphylaxis will develop—provided he is susceptible. (The same is true for any other antitoxin, such as anti-tetanus, for example.) The essential thing is, that full ten days, or more, must elapse between any two injections, in order to sensitize a subject. It is not known how long this sensitization lasts; however, it is believed by some to persist for years.

In practice, it is advisable invariably to inquire definitely into a patient's history as to whether or not he has previously received any injection of an animal-serum of any kind. If so, measures should be adopted to prevent the occurrence of anaphylaxis, if such medication with serum be required. And this object can be accomplished in a number of ways; as follows:

1. Ether- or, better, alcohol-narcosis (produced by administering the agent by inhalation, internally, hypodermically or rectally) will confer a complete, although only transi-

tory immunity from anaphylaxis. This method, however, is rarely practiced, except in grave and pressing emergencies.

2. The prophylactic injection of a serum, that is, of the same kind of serum (horse-serum or whatever is to be used) that has previously been heated to 80° C., will confer a sure and lasting immunity. This immunity, however, is but slowly established, and there is usually a slight reaction to the prophylactic injection. This fact, however, renders the method impractical from a clinical standpoint.

3. The following constitutes a practical prophylactic procedure. Either give a rectal injection of a fairly large amount (say, 5 or 10 Cc.) of a similar serum, or else desensitize the patient by means of the injection of a very small dose—1 or 2 minims—followed two hours later by another small dose, of not over 10 minims. After the lapse of a few hours, the antitoxin required may then be administered.

4. In emergencies, the administration of atropine, hypodermically, is considered by many as the ideal procedure, since the mydriatic alkaloid tends to counteract the respiratory difficulties of the anaphylactic condition.

Now, in answer to the second part of your inquiry, it can be said definitely that there is danger of such a reaction in giving to a normal person, for prophylactic purposes, antidiphtheria-serum at intervals of six weeks. To avoid this possibility (although not probability), prophylactic injections (repetition of the serum) should be repeated inside the stated period of ten days.

However, we would suggest that the patient be actively immunized by means of the prophylactic bacterin, if it has been found that the patient is not naturally immune to diphtheria—as many are—a fact that can be very readily determined by means of the so-called Schick reaction. If the patient is naturally immune, as demonstrated by the Schick reaction, prophylactic or other injections, of course, are entirely unnecessary.

We trust that we have made ourselves sufficiently clear; if not, it will give us pleasure to advise you further concerning any specific instance about which you may wish to inquire.

